

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/ Middlesex Sampling Date: 10-16-17
Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet DW-476
Investigator(s): K. Kinsella, J. Vieira Section, Township, Range: _____
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): None Slope %: 0
Subregion (LRR or MLRA): LRR R Lat: 42°23'35.992 N Long: 71°30'49.0263 W Datum: NAD83
Soil Map Unit Name: _____ NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) Disturbance	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet DW-476

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																																									
1. <u>Acer rubrum</u>	45	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B) Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Total % Cover of:</th> <th style="width: 10%;"></th> <th style="width: 10%;">Multiply by:</th> <th style="width: 10%;"></th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>OBL species</td> <td style="text-align: center;">0</td> <td>x 1 =</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">2</td> <td>x 2 =</td> <td style="text-align: center;">4</td> <td></td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">55</td> <td>x 3 =</td> <td style="text-align: center;">165</td> <td></td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">20</td> <td>x 4 =</td> <td style="text-align: center;">80</td> <td></td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">0</td> <td>x 5 =</td> <td style="text-align: center;">0</td> <td></td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">77</td> <td>(A)</td> <td style="text-align: center;">249</td> <td>(B)</td> </tr> <tr> <td colspan="5">Prevalence Index = B/A = <u>3.23</u></td> </tr> </tbody> </table>	Total % Cover of:		Multiply by:			OBL species	0	x 1 =	0		FACW species	2	x 2 =	4		FAC species	55	x 3 =	165		FACU species	20	x 4 =	80		UPL species	0	x 5 =	0		Column Totals:	77	(A)	249	(B)	Prevalence Index = B/A = <u>3.23</u>				
Total % Cover of:		Multiply by:																																										
OBL species	0	x 1 =	0																																									
FACW species	2	x 2 =	4																																									
FAC species	55	x 3 =	165																																									
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Column Totals:	77	(A)	249	(B)																																								
Prevalence Index = B/A = <u>3.23</u>																																												
2. <u>Pinus strobus</u>	20	Yes	FACU																																									
3. _____																																												
4. _____																																												
5. _____																																												
6. _____																																												
7. _____																																												
	65	=Total Cover																																										
Sapling/Shrub Stratum (Plot size: <u>15</u>)																																												
1. <u>Vaccinium corymbosum</u>	5	Yes	FAC	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																								
2. <u>Acer rubrum</u>	5	Yes	FAC																																									
3. _____																																												
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7. _____																																												
	10	=Total Cover																																										
Herb Stratum (Plot size: <u>5</u>)																																												
1. <u>Vaccinium corymbosum</u>	2	No	FACW	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>																																								
2. _____																																												
3. _____																																												
4. _____																																												
5. _____																																												
6. _____																																												
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9. _____																																												
10. _____																																												
11. _____																																												
12. _____																																												
	2	=Total Cover																																										
Woody Vine Stratum (Plot size: <u>30</u>)																																												
1. _____																																												
2. _____																																												
3. _____																																												
4. _____																																												
		=Total Cover																																										

 Remarks: (Include photo numbers here or on a separate sheet.)
 Modified plot shape, omitted uplands upslope.

SOIL

Sampling Point Wet DW-476

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Hudson/ Middlesex Sampling Date: 10-16-17
Applicant/Owner: Eversource Energy State: MA Sampling Point: Up DW-476
Investigator(s): K. Kinsella, J. Vieira Section, Township, Range: _____
Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope %: 25
Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83
Soil Map Unit Name: _____ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Water Table Present? Yes _____ No <u>X</u>	Depth (inches): _____		
Saturation Present? Yes _____ No <u>X</u>	Depth (inches): _____		
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

 Sampling Point: Up DW-476

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Quercus rubra</u>	<u>45</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)																
2. <u>Quercus alba</u>	<u>15</u>	<u>No</u>	<u>FACU</u>																	
3. <u>Pinus strobus</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
4. <u>Acer rubrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>100</u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Pinus strobus</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>35</u></td> <td>x 3 = <u>105</u></td> </tr> <tr> <td>FACU species <u>105</u></td> <td>x 4 = <u>420</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>155</u> (A)</td> <td><u>570</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.68</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>35</u>	x 3 = <u>105</u>	FACU species <u>105</u>	x 4 = <u>420</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>155</u> (A)	<u>570</u> (B)	Prevalence Index = B/A = <u>3.68</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
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FACU species <u>105</u>	x 4 = <u>420</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>155</u> (A)	<u>570</u> (B)																			
Prevalence Index = B/A = <u>3.68</u>																				
2. <u>Vaccinium corymbosum</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Acer rubrum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>45</u> =Total Cover																				
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Pinus strobus</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Dennstaedtia punctilobula</u>	<u>5</u>	<u>Yes</u>	<u>UPL</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>10</u> =Total Cover																				
Woody Vine Stratum (Plot size: <u>30</u>)																				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				
Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Up DW-476

[illegible]

Sudbury: Wetland 4

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/7/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet CW-1
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Slight Concave Slope %: 0-1

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Windosr Loamy Sand, 0-3% slopes NWI classification: PSS

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

This wetland is a small depression that is approximately four to five feet lower in elevation than the surrounding uplands. It looks like a culvert was historically present that provided a hydrologic connection to the wetland complex to the north of the railroad ROW. However, a culvert could not be identified and as such, it is no longer present/functioning.

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
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<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet CW-1

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer saccharum</u>	35	Yes	FACU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60.0%</u> (A/B)																
2. <u>Juglans nigra</u>	20	Yes	FACU																	
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	55	=Total Cover		Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70</u></td> </tr> <tr> <td>FAC species <u>15</u></td> <td>x 3 = <u>45</u></td> </tr> <tr> <td>FACU species <u>56</u></td> <td>x 4 = <u>224</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>106</u> (A)</td> <td><u>339</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.20</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>15</u>	x 3 = <u>45</u>	FACU species <u>56</u>	x 4 = <u>224</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>106</u> (A)	<u>339</u> (B)	Prevalence Index = B/A = <u>3.20</u>	
Total % Cover of:	Multiply by:																			
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Column Totals: <u>106</u> (A)	<u>339</u> (B)																			
Prevalence Index = B/A = <u>3.20</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Cornus amomum</u>	15	Yes	FACW																	
2. <u>Frangula alnus</u>	15	Yes	FAC																	
3. <u>Lonicera morrowii</u>	1	No	FACU																	
4. _____																				
5. _____																				
6. _____																				
7. _____																				
	31	=Total Cover																		
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Onoclea sensibilis</u>	20	Yes	FACW	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____																				
3. _____																				
4. _____																				
5. _____																				
6. _____																				
7. _____																				
8. _____																				
9. _____																				
10. _____																				
11. _____																				
12. _____																				
	20	=Total Cover																		
Woody Vine Stratum (Plot size: _____)																				
1. _____																				
2. _____																				
3. _____																				
4. _____																				
		=Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Wet CW-1

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/7/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Up CW-1
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____
 Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____
 Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Windsor Loamy Sand, 3-8% slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)
 Although the vegetation met the hydrophytic vegetation criteria, there were no signs of hydrology and the soils were not hydric. Therefore, this plot did not meet wetland criteria.

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
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Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>17</u> Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Up CW-1

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75.0%</u> (A/B)																
2. <u>Prunus serotina</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>65</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>126</u></td> <td>x 3 = <u>378</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>171</u> (A)</td> <td><u>558</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.26</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>126</u>	x 3 = <u>378</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>171</u> (A)	<u>558</u> (B)	Prevalence Index = B/A = <u>3.26</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>5</u>	x 2 = <u>10</u>																			
FAC species <u>126</u>	x 3 = <u>378</u>																			
FACU species <u>30</u>	x 4 = <u>120</u>																			
UPL species <u>10</u>	x 5 = <u>50</u>																			
Column Totals: <u>171</u> (A)	<u>558</u> (B)																			
Prevalence Index = B/A = <u>3.26</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Lonicera morrowii</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
3. <u>Rhamnus cathartica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>50</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Frangula alnus</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Celastrus orbiculatus</u>	<u>10</u>	<u>No</u>	<u>UPL</u>																	
3. <u>Rhamnus cathartica</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
4. <u>Thelypteris palustris</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
5. <u>Solidago rugosa</u>	<u>1</u>	<u>No</u>	<u>FAC</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>56</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover																	
Remarks: (Include photo numbers here or on a separate sheet.)																				

Sampling Point Up CW-1

Northcentral and Northeast Region – Version 2.0

Sudbury: Wetland 12

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/8/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet CW-14
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): _____ Slope %: 2

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam, 0-3% slopes NWI classification: PFO

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 12

Saturation Present? Yes X No _____ Depth (inches): 3

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet CW-14

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Pinus strobus</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
3. <u>Quercus rubra</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>60</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>65</u></td> <td>x 1 = <u>65</u></td> </tr> <tr> <td>FACW species <u>35</u></td> <td>x 2 = <u>70</u></td> </tr> <tr> <td>FAC species <u>95</u></td> <td>x 3 = <u>285</u></td> </tr> <tr> <td>FACU species <u>20</u></td> <td>x 4 = <u>80</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>215</u> (A)</td> <td><u>500</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.33</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>65</u>	x 1 = <u>65</u>	FACW species <u>35</u>	x 2 = <u>70</u>	FAC species <u>95</u>	x 3 = <u>285</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>215</u> (A)	<u>500</u> (B)	Prevalence Index = B/A = <u>2.33</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>65</u>	x 1 = <u>65</u>																			
FACW species <u>35</u>	x 2 = <u>70</u>																			
FAC species <u>95</u>	x 3 = <u>285</u>																			
FACU species <u>20</u>	x 4 = <u>80</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>215</u> (A)	<u>500</u> (B)																			
Prevalence Index = B/A = <u>2.33</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	<u>50</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Vaccinium corymbosum</u>	<u>10</u>	<u>No</u>	<u>FACW</u>																	
3. <u>Ilex verticillata</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
4. <u>Quercus bicolor</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>70</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Osmunda spectabilis</u>	<u>40</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Thelypteris palustris</u>	<u>15</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Leersia oryzoides</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>																	
4. <u>Symplocarpus foetidus</u>	<u>5</u>	<u>No</u>	<u>OBL</u>																	
5. <u>Frangula alnus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
6. <u>Typha latifolia</u>	<u>5</u>	<u>No</u>	<u>OBL</u>																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>85</u>	=Total Cover																	
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover																	

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Wet CW-14

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/8/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Up CW-14
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Hinkley Loamy Sand, 8-15% slopes NWI classification: UPL

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Up CW-14

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. <u>Pinus strobus</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Quercus rubra</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>95</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>67</u></td> <td>x 3 = <u>201</u></td> </tr> <tr> <td>FACU species <u>65</u></td> <td>x 4 = <u>260</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>142</u> (A)</td> <td><u>481</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.39</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>67</u>	x 3 = <u>201</u>	FACU species <u>65</u>	x 4 = <u>260</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>142</u> (A)	<u>481</u> (B)	Prevalence Index = B/A = <u>3.39</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>10</u>	x 2 = <u>20</u>																			
FAC species <u>67</u>	x 3 = <u>201</u>																			
FACU species <u>65</u>	x 4 = <u>260</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>142</u> (A)	<u>481</u> (B)																			
Prevalence Index = B/A = <u>3.39</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Vaccinium corymbosum</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Betula populifolia</u>	<u>1</u>	<u>No</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>21</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Frangula alnus</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Quercus rubra</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
3. <u>Pinus strobus</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
4. <u>Toxicodendron radicans</u>	<u>1</u>	<u>No</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>26</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover																	

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Up CW-14

[illegible]

Sudbury: Wetland 13

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/8/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet DW-79
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____
 Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____
 Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Hollis-Rock Outcrop-Charlton Complex, 15-25% slopes NWI classification: PFO
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) <u>X</u> Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) <u>X</u> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet DW-79

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>60</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. <u>Betula populifolia</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
3. <u>Juglans nigra</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>80</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>15</u></td> <td>x 1 = <u>15</u></td> </tr> <tr> <td>FACW species <u>10</u></td> <td>x 2 = <u>20</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>10</u></td> <td>x 4 = <u>40</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>115</u> (A)</td> <td><u>315</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.74</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>15</u>	x 1 = <u>15</u>	FACW species <u>10</u>	x 2 = <u>20</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>10</u>	x 4 = <u>40</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>115</u> (A)	<u>315</u> (B)	Prevalence Index = B/A = <u>2.74</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>15</u>	x 1 = <u>15</u>																			
FACW species <u>10</u>	x 2 = <u>20</u>																			
FAC species <u>80</u>	x 3 = <u>240</u>																			
FACU species <u>10</u>	x 4 = <u>40</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>115</u> (A)	<u>315</u> (B)																			
Prevalence Index = B/A = <u>2.74</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Vaccinium corymbosum</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Betula populifolia</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>20</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Osmunda regalis</u>	<u>15</u>	<u>Yes</u>	<u>OBL</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>15</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover																	

Remarks: (Include photo numbers here or on a separate sheet.)

 The wetland indicator status for *Osmunda regalis* was taken from New England Wild Flower Society's Go Botany website because it did not have an indicator status on the NRCS Plants Database website.

SOIL

Sampling Point Wet DW-79

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/8/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Up DW-79
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope %: 5-10

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Hollis-Rock Outcrop-Charlton Complex, 15-25% slopes NWI classification: UPL

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Up DW-79

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Quercus rubra</u>	<u>30</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>37.5%</u> (A/B)																
2. <u>Acer saccharinum</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>																	
3. <u>Acer rubrum</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>95</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 40%;">Total % Cover of:</th> <th style="width: 60%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>45</u></td> <td>x 3 = <u>135</u></td> </tr> <tr> <td>FACU species <u>45</u></td> <td>x 4 = <u>180</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>125</u> (A)</td> <td><u>415</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.32</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>45</u>	x 3 = <u>135</u>	FACU species <u>45</u>	x 4 = <u>180</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>125</u> (A)	<u>415</u> (B)	Prevalence Index = B/A = <u>3.32</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>25</u>	x 2 = <u>50</u>																			
FAC species <u>45</u>	x 3 = <u>135</u>																			
FACU species <u>45</u>	x 4 = <u>180</u>																			
UPL species <u>10</u>	x 5 = <u>50</u>																			
Column Totals: <u>125</u> (A)	<u>415</u> (B)																			
Prevalence Index = B/A = <u>3.32</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Pinus strobus</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
2. <u>Prunus serotina</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Frangula alnus</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>15</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Celastrus orbiculatus</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>																	
2. <u>Quercus rubra</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>15</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>																

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Up DW-79

[illegible]

Sudbury: Wetland 14

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/8/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet DW-92
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam, 0-3% slopes NWI classification: PEM

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<u>X</u> Surface Water (A1)	_____ Water-Stained Leaves (B9)	<u>_____</u> Surface Soil Cracks (B6)	
<u>X</u> High Water Table (A2)	_____ Aquatic Fauna (B13)	<u>_____</u> Drainage Patterns (B10)	
<u>X</u> Saturation (A3)	_____ Marl Deposits (B15)	<u>_____</u> Moss Trim Lines (B16)	
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	<u>_____</u> Dry-Season Water Table (C2)	
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	<u>_____</u> Crayfish Burrows (C8)	
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	<u>_____</u> Saturation Visible on Aerial Imagery (C9)	
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	<u>_____</u> Stunted or Stressed Plants (D1)	
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	<u>X</u> Geomorphic Position (D2)	
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	<u>X</u> Shallow Aquitard (D3)	
_____ Sparsely Vegetated Concave Surface (B8)		<u>_____</u> Microtopographic Relief (D4)	
		<u>X</u> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 3

Water Table Present? Yes X No _____ Depth (inches): 0

Saturation Present? Yes X No _____ Depth (inches): 0

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet DW-92

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>90</u></td> <td>x 1 = <u>90</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>10</u></td> <td>x 3 = <u>30</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>120</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>1.20</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>90</u>	x 1 = <u>90</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>10</u>	x 3 = <u>30</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>120</u> (B)	Prevalence Index = B/A = <u>1.20</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>90</u>	x 1 = <u>90</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>10</u>	x 3 = <u>30</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>100</u> (A)	<u>120</u> (B)																			
Prevalence Index = B/A = <u>1.20</u>																				
=Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
=Total Cover				Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>X</u> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
=Total Cover																				
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Lemna minor</u>	<u>50</u>	<u>Yes</u>	<u>OBL</u>																	
2. <u>Leersia oryzoides</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>																	
3. <u>Calamagrostis canadensis</u>	<u>10</u>	<u>No</u>	<u>OBL</u>																	
4. <u>Eutrochium purpureum</u>	<u>5</u>	<u>No</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
=Total Cover																				
Woody Vine Stratum (Plot size: _____)				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
=Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point Wet DW-92

[illegible]

Sudbury: Wetland 15

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/29/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet CW-192
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Deerfield Loamy Sand, 3-8% slopes NWI classification: PEM

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<u>X</u> Surface Water (A1)	_____ Water-Stained Leaves (B9)	_____ Surface Soil Cracks (B6)	
<u>X</u> High Water Table (A2)	_____ Aquatic Fauna (B13)	_____ Drainage Patterns (B10)	
<u>X</u> Saturation (A3)	_____ Marl Deposits (B15)	_____ Moss Trim Lines (B16)	
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	_____ Dry-Season Water Table (C2)	
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	_____ Crayfish Burrows (C8)	
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	_____ Saturation Visible on Aerial Imagery (C9)	
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Stunted or Stressed Plants (D1)	
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	_____ Geomorphic Position (D2)	
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	_____ Shallow Aquitard (D3)	
_____ Sparsely Vegetated Concave Surface (B8)		_____ Microtopographic Relief (D4)	
		<u>X</u> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 1

Water Table Present? Yes X No _____ Depth (inches): 0

Saturation Present? Yes X No _____ Depth (inches): 0

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No upland plot collected - all fill/railroad

Sampling Point: Wet CW-192

		Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: 30)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
					=Total Cover
Sapling/Shrub Stratum (Plot size: 15)					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
					=Total Cover
Herb Stratum (Plot size: 5)					
1.	Sparganium americanum	35	Yes	OBL	
2.	Lemna minor	25	Yes	OBL	
3.	Peltandra virginica	15	No	OBL	
4.	Leersia oryzoides	15	No	OBL	
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
					90 =Total Cover
Woody Vine Stratum (Plot size:)					
1.					
2.					
3.					
4.					
					=Total Cover
Remarks: (Include photo numbers here or on a separate sheet.)					

Dominance Test worksheet:			
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)			
Total Number of Dominant Species Across All Strata: 2 (B)			
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)			
Prevalence Index worksheet:			
Total % Cover of:	Multiply by:		
OBL species 90	x 1 =	90	
FACW species 0	x 2 =	0	
FAC species 0	x 3 =	0	
FACU species 0	x 4 =	0	
UPL species 0	x 5 =	0	
Column Totals: 90	(A)	90	(B)
Prevalence Index = B/A = 1.00			
Hydrophytic Vegetation Indicators:			
___ 1 - Rapid Test for Hydrophytic Vegetation			
<input checked="" type="checkbox"/> 2 - Dominance Test is >50%			
<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹			
___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
___ Problematic Hydrophytic Vegetation ¹ (Explain)			
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.			
Definitions of Vegetation Strata:			
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.			
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
Woody vines – All woody vines greater than 3.28 ft in height.			
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No ___			

SOIL

Sampling Point Wet CW-192

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	Loc ²		
0-14	10YR 2/1						Muck	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

X Histosol (A1)
Histic Epipedon (A2)
Black Histic (A3)
Hydrogen Sulfide (A4)
Stratified Layers (A5)
Depleted Below Dark Surface (A11)
Thick Dark Surface (A12)
Sandy Mucky Mineral (S1)
Sandy Gleyed Matrix (S4)
Sandy Redox (S5)
Stripped Matrix (S6)
Dark Surface (S7)

Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)

Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
High Chroma Sands (S11) (**LRR K, L**)
Loamy Mucky Mineral (F1) (**LRR K, L**)
Loamy Gleyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils³:

2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
Coast Prairie Redox (A16) (**LRR K, L, R**)
5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
Polyvalue Below Surface (S8) (**LRR K, L**)
Thin Dark Surface (S9) (**LRR K, L**)
Iron-Manganese Masses (F12) (**LRR K, L, R**)
Piedmont Floodplain Soils (F19) (**MLRA 149B**)
Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
Red Parent Material (F21)
Very Shallow Dark Surface (F22)
Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:
Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. ([http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx](#))

Sudbury: Wetland 16

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/29/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet DW-260
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Slight Depression Local relief (concave, convex, none): None Slope %: _____
 Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam, 0-3% slopes NWI classification: PEM
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) <u>X</u> High Water Table (A2) _____ Aquatic Fauna (B13) <u>X</u> Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> Saturation Present? Yes <u>X</u> No _____ Depth (inches): <u>1</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: Although surface water was not present at the data plot, surface water ranging from 1-6 inches was present throughout the wetland.		

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet DW-260

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																
2. <u>Pinus strobus</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Quercus rubra</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>80</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>25</u></td> <td>x 2 = <u>50</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>50</u></td> <td>x 4 = <u>200</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>125</u> (A)</td> <td><u>400</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.20</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>25</u>	x 2 = <u>50</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>50</u>	x 4 = <u>200</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>125</u> (A)	<u>400</u> (B)	Prevalence Index = B/A = <u>3.20</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>25</u>	x 2 = <u>50</u>																			
FAC species <u>50</u>	x 3 = <u>150</u>																			
FACU species <u>50</u>	x 4 = <u>200</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>125</u> (A)	<u>400</u> (B)																			
Prevalence Index = B/A = <u>3.20</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>10</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Osmunda cinnamomea</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>																	
2. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>35</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover	Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
Remarks: (Include photo numbers here or on a separate sheet.) Pinus strobus and Quercus rubra were rooted outside of the plot in uplands.																				

SOIL

Sampling Point Wet DW-260

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/29/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Up DW-260
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____
 Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____
 Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) _____ Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) _____ Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: Up DW-260

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer saccharum</u>	<u>35</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)																
2. <u>Quercus rubra</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Pinus strobus</u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u>Acer rubrum</u>	<u>10</u>	<u>No</u>	<u>FAC</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>90</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>20</u></td> <td>x 3 = <u>60</u></td> </tr> <tr> <td>FACU species <u>95</u></td> <td>x 4 = <u>380</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>115</u> (A)</td> <td><u>440</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.83</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>20</u>	x 3 = <u>60</u>	FACU species <u>95</u>	x 4 = <u>380</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>115</u> (A)	<u>440</u> (B)	Prevalence Index = B/A = <u>3.83</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>20</u>	x 3 = <u>60</u>																			
FACU species <u>95</u>	x 4 = <u>380</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>115</u> (A)	<u>440</u> (B)																			
Prevalence Index = B/A = <u>3.83</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Acer saccharum</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>15</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Viburnum dentatum</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Acer rubrum</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>10</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>																
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point Up DW-260

[illegible]

Sudbury: Wetland 18

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/29/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet CW-169
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: _____
 Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam, 0-3% slopes NWI classification: PSS
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> _____ Surface Water (A1) <u>X</u> Water-Stained Leaves (B9) _____ High Water Table (A2) _____ Aquatic Fauna (B13) _____ Saturation (A3) _____ Marl Deposits (B15) _____ Water Marks (B1) _____ Hydrogen Sulfide Odor (C1) _____ Sediment Deposits (B2) <u>X</u> Oxidized Rhizospheres on Living Roots (C3) _____ Drift Deposits (B3) _____ Presence of Reduced Iron (C4) _____ Algal Mat or Crust (B4) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Iron Deposits (B5) _____ Thin Muck Surface (C7) _____ Inundation Visible on Aerial Imagery (B7) _____ Other (Explain in Remarks) _____ Sparsely Vegetated Concave Surface (B8)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) <u>X</u> Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Stunted or Stressed Plants (D1) <u>X</u> Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ Microtopographic Relief (D4) _____ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes _____ No _____ Depth (inches): _____ Water Table Present? Yes _____ No _____ Depth (inches): _____ Saturation Present? Yes _____ No _____ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <u>X</u> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet CW-169

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)																
2. <u>Acer saccharum</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>70</u> =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	<u>35</u>	<u>Yes</u>	<u>FAC</u>	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>7</u></td> <td>x 2 = <u>14</u></td> </tr> <tr> <td>FAC species <u>150</u></td> <td>x 3 = <u>450</u></td> </tr> <tr> <td>FACU species <u>40</u></td> <td>x 4 = <u>160</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>197</u> (A)</td> <td><u>624</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>3.17</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>7</u>	x 2 = <u>14</u>	FAC species <u>150</u>	x 3 = <u>450</u>	FACU species <u>40</u>	x 4 = <u>160</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>197</u> (A)	<u>624</u> (B)	Prevalence Index = B/A = <u>3.17</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>7</u>	x 2 = <u>14</u>																			
FAC species <u>150</u>	x 3 = <u>450</u>																			
FACU species <u>40</u>	x 4 = <u>160</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>197</u> (A)	<u>624</u> (B)																			
Prevalence Index = B/A = <u>3.17</u>																				
2. <u>Prunus serotina</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
3. <u>Acer saccharum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
4. <u>Cercis canadensis</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
5. <u>Ilex verticillata</u>	<u>2</u>	<u>No</u>	<u>FACW</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>52</u> =Total Cover																				
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Dryopteris intermedia</u>	<u>45</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Toxicodendron radicans</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>75</u> =Total Cover																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point Wet CW-169

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/29/17
 Applicant/Owner: Eversource Energy State: ME Sampling Point: Up CW-169
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): Slight Slope Local relief (concave, convex, none): _____ Slope %: 2-5

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam, 0-3% slopes NWI classification: UPL

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? Yes _____ No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Up CW-169

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer saccharum</u>	<u>40</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
	<u>40</u>	<u>=Total Cover</u>		Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>5</u></td> <td>x 2 = <u>10</u></td> </tr> <tr> <td>FAC species <u>50</u></td> <td>x 3 = <u>150</u></td> </tr> <tr> <td>FACU species <u>90</u></td> <td>x 4 = <u>360</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>145</u></td> <td>(A) <u>520</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.59</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>5</u>	x 2 = <u>10</u>	FAC species <u>50</u>	x 3 = <u>150</u>	FACU species <u>90</u>	x 4 = <u>360</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>145</u>	(A) <u>520</u> (B)	Prevalence Index = B/A = <u>3.59</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>5</u>	x 2 = <u>10</u>																			
FAC species <u>50</u>	x 3 = <u>150</u>																			
FACU species <u>90</u>	x 4 = <u>360</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>145</u>	(A) <u>520</u> (B)																			
Prevalence Index = B/A = <u>3.59</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. <u>Prunus serotina</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
3. <u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>No</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
	<u>35</u>	<u>=Total Cover</u>																		
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Toxicodendron radicans</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height. Hydrophytic Vegetation Present? Yes <u> </u> No <u> X </u>																
2. <u>Prunus serotina</u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>																	
3. <u>Parthenocissus quinquefolia</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
4. <u>Rubus allegheniensis</u>	<u>10</u>	<u>No</u>	<u>FACU</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
	<u>70</u>	<u>=Total Cover</u>																		
Woody Vine Stratum (Plot size: <u> </u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
	_____	<u>=Total Cover</u>																		

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point Up CW-169

[illegible]

Sudbury: Wetland 19

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/29/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Wet DW-248
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam, 0-3% slopes NWI classification: PSS

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input checked="" type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Wet DW-248

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	35	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.0%</u> (A/B)																
2. <u>Catalpa speciosa</u>	15	Yes	FACU																	
3. <u>Acer saccharinum</u>	15	Yes	FACW																	
4. <u>Acer saccharum</u>	10	No	FACU																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
75 =Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Frangula alnus</u>	5	Yes	FAC	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="text-align: left;">Total % Cover of:</th> <th style="text-align: left;">Multiply by:</th> </tr> <tr> <td>OBL species <u>65</u></td> <td>x 1 = <u>65</u></td> </tr> <tr> <td>FACW species <u>15</u></td> <td>x 2 = <u>30</u></td> </tr> <tr> <td>FAC species <u>40</u></td> <td>x 3 = <u>120</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>145</u> (A)</td> <td><u>315</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.17</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>65</u>	x 1 = <u>65</u>	FACW species <u>15</u>	x 2 = <u>30</u>	FAC species <u>40</u>	x 3 = <u>120</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>145</u> (A)	<u>315</u> (B)	Prevalence Index = B/A = <u>2.17</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>65</u>	x 1 = <u>65</u>																			
FACW species <u>15</u>	x 2 = <u>30</u>																			
FAC species <u>40</u>	x 3 = <u>120</u>																			
FACU species <u>25</u>	x 4 = <u>100</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>145</u> (A)	<u>315</u> (B)																			
Prevalence Index = B/A = <u>2.17</u>																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
5 =Total Cover																				
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Boehmeria cylindrica</u>	65	Yes	OBL	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
65 =Total Cover																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
_____ =Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point Wet DW-248

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sudbury-Hudson City/County: Sudbury/Middlesex Sampling Date: 9/29/17
 Applicant/Owner: Eversource Energy State: MA Sampling Point: Up DW-248
 Investigator(s): K. Kinsella, J. Peterson Section, Township, Range: _____

Landform (hillside, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope %: _____

Subregion (LRR or MLRA): LRR R Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Scarboro Mucky Fine Sandy Loam, 0-3% slopes NWI classification: UPL

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)
 Please see the remarks for hydrophytic vegetation.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)
		<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? Yes _____ No _____ Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

 Sampling Point: Up DW-248

Tree Stratum (Plot size: <u>30</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>57.1%</u> (A/B)																
2. <u>Acer saccharum</u>	<u>20</u>	<u>No</u>	<u>FACU</u>																	
3. <u>Prunus serotina</u>	<u>20</u>	<u>No</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>110</u>	=Total Cover	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>100</u></td> <td>x 3 = <u>300</u></td> </tr> <tr> <td>FACU species <u>80</u></td> <td>x 4 = <u>320</u></td> </tr> <tr> <td>UPL species <u>5</u></td> <td>x 5 = <u>25</u></td> </tr> <tr> <td>Column Totals: <u>185</u> (A)</td> <td><u>645</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.49</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>100</u>	x 3 = <u>300</u>	FACU species <u>80</u>	x 4 = <u>320</u>	UPL species <u>5</u>	x 5 = <u>25</u>	Column Totals: <u>185</u> (A)	<u>645</u> (B)	Prevalence Index = B/A = <u>3.49</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>100</u>	x 3 = <u>300</u>																			
FACU species <u>80</u>	x 4 = <u>320</u>																			
UPL species <u>5</u>	x 5 = <u>25</u>																			
Column Totals: <u>185</u> (A)	<u>645</u> (B)																			
Prevalence Index = B/A = <u>3.49</u>																				
Sapling/Shrub Stratum (Plot size: <u>15</u>)																				
1. <u>Acer saccharum</u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>																	
2. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Prunus serotina</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
		<u>35</u>	=Total Cover	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>X</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
Herb Stratum (Plot size: <u>5</u>)																				
1. <u>Toxicodendron radicans</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
2. <u>Frangula alnus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>																	
3. <u>Prunus serotina</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>																	
4. <u>Acer saccharum</u>	<u>5</u>	<u>No</u>	<u>FACU</u>																	
5. <u>Stylophorum diphyllum</u>	<u>5</u>	<u>No</u>	<u>UPL</u>																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
		<u>40</u>	=Total Cover	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
		_____	=Total Cover	Hydrophytic Vegetation Present? Yes <u>X</u> No _____																

Remarks: (Include photo numbers here or on a separate sheet.)
 Although the plot meets the criteria for hydrophytic vegetation using the dominance test, Frangula alnus and Toxicodendron radicans occupy both wetland and upland habitats, particularly on this disturbed site. There are no FACW or OBL species within the plot and there are no signs of hydrology or hydric soils; therefore, the plot does not meet wetland criteria.

SOIL

Sampling Point Up DW-248

[illegible]

Appendix D: Representative Photographs

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Hudson



Photo 1 View of emergent Wetland 3 on the south side of the existing rail bed.



Photo 2 View of emergent marsh and aquatic bed component of Wetland 6 on the south side of the existing rail bed.



Photo 3 Emergent marsh part of Wetland 7 on the north side of the existing rail bed.



Photo 4 View of Fort Meadow Brook at the existing rail bed crossing.



Photo 5 View of Bridge 130 across Fort Meadow Brook.



Photo 6 View of Wetland 12, a narrow feature in a slight rail ditch depression between the rail bed and a steep slope.



Photo 7 View of Wetland 21 with standing water.

Sudbury



Photo 8 View of Wetland 4 located on the south side of the rail bed near flag CW-2.



Photo 9 View of Wetland 12 associated with the Hop Brook marsh system to the south of the rail bed near flag CW-23.



Photo 10 View of Wetland 13 to the north of the rail bed near flag DW-73.



Photo 11 View of the PFO portion of Wetland 14 to the north of the rail bed near flag DW-86.



Photo 12 View of the PEM portion of Wetland 14 to the north of the rail bed near flag DW-89.



Photo 13 View of Hop Brook (Bridge 127) to the north of the railroad bridge near flags DW-94/DB-13.



Photo 14 View of Bridge 127 over Hop Brook.



Photo 15 View of Wetland 15 to the north of the rail bed near flag CW-190.



Photo 16 View of Wetland 16 to the south of the rail bed near flag DW-264.



Photo 17 View of Wetland 18 to the north of the rail bed near flag CW-163.



Photo 18 View of Wetland 19 to the south of the rail bed near flag DW-244.



Photo 19 View of Hop Brook (Bridge 128) to the south of the rail bed near flag AB-34.



Photo 20 View of Bridge 127 over Hop Brook.



**Sudbury-Hudson Transmission Reliability and
Mass Central Rail Trail Project**

Wetland Delineation Photographs



Appendix E: Wetland Functions & Values

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Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetlands: 630 sf **Human made?** Yes **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW

Dominant wetland systems present: PEM

Distance to nearest roadway or other development: 40 ft to orchard

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? Yes

If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? 0

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Hudson Wetland 3

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Grading **Area:** 312 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge		x			
Floodflow Alteration	x		9, 18		
Fish and Shellfish Habitat		x			
Sediment/Toxicant Retention	x		1, 2		
Nutrient Removal	x		8, 9		
Production Export	x		7		
Sediment/Shoreline Stabilization		x			
Wildlife Habitat	x		13		
Recreation		x			
Educational Scientific Value		x			
Uniqueness/Heritage	x		17, 22		
Visual Quality/Aesthetics		x			
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetlands: 7.4 ac **Human made?** No **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW, construction materials company

Dominant wetland systems present: PEM

Distance to nearest roadway or other development: 25 ft to industrial

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? No

If not, where does the wetland lie in the drainage basin? Lower

How many tributaries contribute to the wetland? 1

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Hudson Wetlands 6 & 7

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Crane mats **Area:** 1936 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge	x		1, 4, 7, 12	x	
Floodflow Alteration	x		1, 5, 6, 8, 10, 13, 18	x	
Fish and Shellfish Habitat	x		4, 5, 14, 15, 16	x	
Sediment/Toxicant Retention	x		2, 3, 4, 5, 6, 7, 9, 10, 14, 15, 16	x	
Nutrient Removal	x		1, 2, 5, 6, 7, 8, 9, 12, 14	x	
Production Export	x		1, 4, 7, 10, 12	x	Small amount of <i>Cirsium muticum</i> is present as well as beaver activity
Sediment/Shoreline Stabilization	x		3, 5, 7, 15	x	
Wildlife Habitat	x		2, 6, 7, 8, 9, 11, 13, 17	x	
Recreation	x		5		
Educational Scientific Value	x		2, 5		
Uniqueness/Heritage	x		5, 6, 13, 18, 19, 22, 27	x	
Visual Quality/Aesthetics	x		2, 12		
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetlands: 310 sf **Human made?** Yes **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW

Dominant wetland systems present: PFO

Distance to nearest roadway or other development: 285 ft to industrial

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? Yes

If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? 0

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Hudson Wetland 12

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Grading **Area:** 310 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge	x		4		
Floodflow Alteration	x		9		
Fish and Shellfish Habitat		x			
Sediment/Toxicant Retention		x			
Nutrient Removal		x			
Production Export	x		1		<i>Vaccinium corymbosum</i> present
Sediment/Shoreline Stabilization		x			
Wildlife Habitat	x		5, 8		
Recreation		x			
Educational Scientific Value		x			
Uniqueness/Heritage		x			
Visual Quality/Aesthetics		x			
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetlands: 1060 sf **Human made?** No **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW to north, residential to south

Dominant wetland systems present: PFO

Distance to nearest roadway or other development: 25 ft to backyard

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? Yes

If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? 0

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Hudson Wetland 21

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Cut in grade **Area:** 27 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge		x			
Floodflow Alteration	x		9		
Fish and Shellfish Habitat		x			
Sediment/Toxicant Retention	x		1, 2, 9	x	
Nutrient Removal	x		4		
Production Export	x		1		
Sediment/Shoreline Stabilization	x		3		
Wildlife Habitat	x		7, 8		
Recreation		x			
Educational Scientific Value		x			
Uniqueness/Heritage		x			
Visual Quality/Aesthetics		x			
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetlands: 286 sf **Human made?** No **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW

Dominant wetland systems present: PSS

Distance to nearest roadway or other development: 150 ft to apartments

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? No

If not, where does the wetland lie in the drainage basin? Upper

How many tributaries contribute to the wetland? 1

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Sudbury Wetland 4

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Grading **Area:** 286 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge		x			
Floodflow Alteration	x		2, 5		
Fish and Shellfish Habitat		x			
Sediment/Toxicant Retention		x			
Nutrient Removal	x		5		
Production Export		x			
Sediment/Shoreline Stabilization		x			
Wildlife Habitat	x		7, 8		
Recreation		x			
Educational Scientific Value		x			
Uniqueness/Heritage		x			
Visual Quality/Aesthetics		x			
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetlands: 12.5 ac **Human made?** No **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW

Dominant wetland systems present: PFO/PEM

Distance to nearest roadway or other development: 185 ft to lawn

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? No

If not, where does the wetland lie in the drainage basin? Lower

How many tributaries contribute to the wetland? 1

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Sudbury Wetlands 12, 14, 15, 16

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Crane mats **Area:** 296 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge	x		2, 7		Associated with Hop Brook
Floodflow Alteration	x		1, 5, 6, 8, 9, 10, 13, 14, 18	x	Wetland system also includes wetlands 8, 7, and 6
Fish and Shellfish Habitat	x		4, 14, 15	x	
Sediment/Toxicant Retention	x		1, 2, 3, 5, 9, 10, 12, 14, 15	x	
Nutrient Removal	x		1, 2, 4, 5, 7, 9, 12, 14	x	
Production Export	x		1, 2, 7, 10	x	
Sediment/Shoreline Stabilization	x		4, 5, 7, 9, 12, 13, 14, 15	x	
Wildlife Habitat	x		2, 6, 7, 8, 9, 11, 13	x	
Recreation	x		5, 9		
Educational Scientific Value	x		5		
Uniqueness/Heritage	x		5, 6, 13, 16, 19, 22, 28	x	
Visual Quality/Aesthetics	x		2, 8, 10	x	
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetlands: 316 sf **Human made?** No **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW

Dominant wetland systems present: PFO

Distance to nearest roadway or other development: 362 ft to office bldg

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? Yes

If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? 0

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Sudbury Wetland 13

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Grading (fill) **Area:** 303 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge		x			
Floodflow Alteration	x		5, 9		
Fish and Shellfish Habitat		x			
Sediment/Toxicant Retention		x			
Nutrient Removal		x			
Production Export		x			
Sediment/Shoreline Stabilization		x			
Wildlife Habitat	x		4, 5, 7, 8	x	
Recreation		x			
Educational Scientific Value		x			
Uniqueness/Heritage	x		17, 19, 22	x	
Visual Quality/Aesthetics	x		10		
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetland: 3837 sf **Human made?** No **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW

Dominant wetland systems present: PSS

Distance to nearest roadway or other development: 100 ft to parking lot

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? No

If not, where does the wetland lie in the drainage basin? Upper

How many tributaries contribute to the wetland? 0

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Sudbury Wetland 18

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Headwall + cut in grade **Area:** 27 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge		x			
Floodflow Alteration	x		4, 5		Impervious surfaces from residential development to south and commercial development to the north
Fish and Shellfish Habitat		x			
Sediment/Toxicant Retention	x		1, 2, 4		
Nutrient Removal	x		4		
Production Export		x			
Sediment/Shoreline Stabilization		x			
Wildlife Habitat		x			
Recreation		x			
Educational Scientific Value		x			
Uniqueness/Heritage		x			
Visual Quality/Aesthetics		x			
Endangered Species Habitat		x			
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Wetland Function - Value Evaluation Form

Based on the ACOE Highway Methodology Workbook Supplement, Wetland Functions, and Values: A Descriptive Approach

Total area of wetland: 7973 sf **Human made?** No **Is wetland part of a wildlife corridor or a "habitat island"?** No

Adjacent land use: Railroad ROW

Dominant wetland systems present: PSS

Distance to nearest roadway or other development: 120 ft to residence

Contiguous undeveloped buffer zone present? No

Is the wetland a separate hydraulic system? No

If not, where does the wetland lie in the drainage basin? Upper

How many tributaries contribute to the wetland? 0

Project Name: Sudbury-Hudson/MCRT

VHB Job No.: 12970.00

Wetland ID: Sudbury Wetland 19

Prepared by: VK **Date:** 4/22/2020

Wetland Impact:

Type: Cut in grade **Area:** 4 sf

Evaluation based on:

Office: X **Field:**

Corps manual wetland delineation completed?

Y

Function/Value	Suitability		Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
	Y	N			
Groundwater Recharge/Discharge		x			
Floodflow Alteration	x		4, 5		Impervious surfaces from residential development to south and commercial development to the north
Fish and Shellfish Habitat		x			
Sediment/Toxicant Retention	x		1, 2, 4		Sediment deposits present
Nutrient Removal	x		3, 4		
Production Export		x			
Sediment/Shoreline Stabilization		x			
Wildlife Habitat		x			
Recreation		x			
Educational Scientific Value		x			
Uniqueness/Heritage		x			
Visual Quality/Aesthetics		x			
Endangered Species Habitat		x			
Other					

Notes:

*Refer to list of numbered considerations in ACOE Descriptive Approach Publications

Appendix F: Historic and Archaeological Resources Documentation

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Mashpee Wampanoag Tribe
Section 106 Review
Consultation Response Form

Project Docket Number:	Sudbury Hudson Transmission Reliability Project
Consultant/Environmental Firm:	US ACOE/Eversource/VHB
Address or Location Description:	Various location
City, State:	Sudbury, Malborough, Stow & Hudson, MA
Point of Contact	Denise Bartone Project Manager w/ Eversource

Response:

- ☐ We have no concerns related to the proposed project. MWT anticipates no adverse affects to our sites of cultural significance, by you or your client.
- ☐ The MWT considers this project in compliance with the MWT's section 106 review process with agreed upon mitigations.
- ☐ This site will require the on-site presence of a Tribal Cultural Resource Monitor during ground disturbing activities. Contact the Compliance Review Supervisor with construction schedule.
- ☒ The Mashpee Wampanoag Tribe has reviewed this project and offers these comments in regard to the above mentioned project. This project has the potential to affect historic or cultural resources important to our tribe.

After conducting a review of the documents received we have determined there is a potential to "adversely effect" cultural resources and find the proposed project areas to be culturally significant to the Mashpee Wampanoag Tribe.

We will require a Tribal CRM to access/monitor ground disturbing activities associated with Archaeology and or construction. We request contact information for the general contractor/project manager in charge of scheduling. The proponent will be responsible for all reasonable cost associated with our monitoring at a rate of \$75.00/hr. plus mileage, which is expected to be paid within 30 days of invoicing.

All information obtained through our participation will inform and advise our attempts to avoid, minimize, or mitigate adverse effects to culturally sensitive assemblages related to the undertaking.

This consultation process initiates your compliance to the National Historic Preservation Act of 1966 and all relevant amendments including but not limited to section 106 and 36 CFR 800.

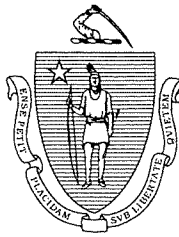
Exception: In the case that archeological resources or human remains are found during construction, you must immediately stop construction and notify us.



David Weeden, Compliance Review
Tribal Historic Preservation Department

7/20/18

Date



The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

April 3, 2019

Barbara Newman
Chief, Permits and Enforcement Branch
Regulatory Division
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

RE: Sudbury-Hudson Transmission Reliability Project, Sudbury, Marlborough, Stow and Hudson, MA.
MHC #RC.62384. EEA #15703.

Dear Ms. Newman:

Staff of the Massachusetts Historical Commission (MHC), have reviewed the archaeological report, *Archaeological Intensive (Locational) Survey for the Sudbury-Hudson Transmission Reliability Project, Towns of Sudbury, Hudson, Marlborough and Stow, Middlesex County, Massachusetts*, prepared and submitted by Commonwealth Heritage Group (CHG) for the project referenced above. The MHC has also received updated design drawings for four bridge crossings in the project area, including the Chestnut Street culvert, and Bridge 130 on Fort Meadow Brook in Hudson; and Bridge 128 and Bridge 127 on Hop Brook in Sudbury. The MHC previously reviewed the 2018 CHG report *Sudbury-Hudson Transmission Reliability Project Reconnaissance-Level Historic Properties Survey*.

The MHC looks forward to reviewing the Corps' findings and determinations for the project pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800).

The MHC received comments from the Sudbury Historical Commission regarding Massachusetts Central Railroad Bridges #127 (MHC #SUD.901) and #128 (SUD.900). The bridges are rare extant examples of the plate girder construction method that date circa 1881, suggesting that the bridges meet the Criteria of Evaluation (36 CFR 60) for listing in the National Register of Historic Places for their architectural significance.

The bridges referenced above, as well as the Fort Meadow Brook Railroad Bridge/ Bridge 130 (MHC #HUD.908), and Boston and Maine Railroad Section Tool House (SUD.282), are included by CHG in a potential Central Massachusetts Railroad Historic District. The Central Massachusetts Railroad historic district includes extant railroad-related architectural and archaeological resources within the former Massachusetts Central Railroad corridor extending from Wilkins Street in Hudson to the Sudbury Substation east of Landham Road in Sudbury.

Current bridge design drawings indicate that modification, including abutment changes, and addition of exterior duct banks to bridges #128 and #130 referenced above are proposed. Plate girder style Bridge #127 is proposed to be demolished and replaced with a new truss design. The proposed modification and/or demolition of the bridges do not appear to be developed in accordance with the Secretary of the Interior's Standards and Guidelines for Rehabilitation (36 CFR 67), as previously requested in the MHC's June 30, 2017 comments on the ENF.

The modification of abutments and demolition constitute an adverse effect (36 CFR 800.5(a)(2)(i); 950 CMR 71.05) to the bridges within the potential Central Massachusetts Railroad Historic District. Alternatives to avoid, minimize or mitigate the adverse effects to the railroad related features and historic bridges should be considered further in consultation with the Sudbury and Hudson Historical Commissions.

The project includes excavation for a potential wetland mitigation area and vegetation removal within the George Pitt Tavern Historic District (SUD.P) in proximity to the Boston and Maine Railroad Section Tool House (SUD.282). The historic district is listed in the State Register of Historic Places and is a local historic district. Alternatives to avoid, minimize or mitigate project impacts to the historic district setting should be considered in consultation with the Sudbury Historic District Commission. The development and implementation of a historic properties avoidance and protection plan for railroad related architecture, including the Tool House, is also recommended during project construction.

If consultation is unable to resolve adverse effects through consideration of project design alternatives, then the MHC recommends that the Corps should make an adverse effect finding, notify the Advisory Council on Historic Preservation (ACHP) (36 CFR 800.6 (a)(1)) and provide the documentation specified in 36 CFR 800.11(e).

Project impacts associated with vegetation removal will not, in the MHC's staff's opinion, adversely effect the significant historic characteristics of the Goodnow/Ransom House (SUD.330), Sudbury First Industrial Area (SUD.D), 1767 Milestone #24 (SUD.922), Hall House (SUD.320), the Oviatt/Hunt House (SUD.12) in South Sudbury (SUD.B), Wayside Inn Historic District (SUD.F), Natick Research and Development Laboratories (SUD.C), Ordway Farm (HUD.108) or Goodale Homestead (HUD.F).

The Sudbury-Hudson-Marlborough granite boundary marker is proposed for avoidance and protection during project construction.

The archaeological survey identified eight ancient Native American and eight historical period archaeological sites. The sites indicated by CHG to be potentially significant archaeological resources include the Ordway Locus 2 and Ordway Locus 3 in Hudson and the Hop Brook Site in Sudbury ancient Native American archaeological sites; and the Gleasondale Station Site (MHC #HUD.HA.8), Ordway Station Site (HUD.HA.9), Memorial Forest Cellar Hole Site (SUD.HA.36), Walker Garrison House (SUD.HA.30), Wayside Inn Station Site (SUD.HA.38), South Sudbury Station (SUD.HA.26), Boston & Maine Railroad Section Tool House (SUD.HA.37/SUD.282) and East Sudbury Station (SUD.HA.39) historical archaeological sites in Hudson and Sudbury. The Ordway Locus 1, Ordway Find Spot 1, Ordway Find Spot 2, White Pond Site and Gleasondale ancient Native American sites in Hudson are not considered by CHG to be potentially significant archaeological resources.

The sites referenced above are within and /or immediately adjacent to proposed project impact areas. The sites appear to be avoidable through the development and implementation of an archaeological site avoidance and protection plan during construction. A draft written archaeological site avoidance and protection plan, including stipulations for fencing, signage and contractor briefings, should be prepared by CHG and submitted to the MHC for review and comment.

If site avoidance and protection plan implementation and/or project redesign to avoid the identified archaeological sites is not feasible, then updated project information and the CHG's recommendations regarding project impacts to intact, significant archaeological resources associated with these sites should be provided to the Corps and MHC for review and comment. Limited archaeological site examination (950 CMR 70), to define site size, boundaries and data contents, may be required.

The MHC looks forward reviewing the information requested above and to consultation to avoid, minimize and mitigate adverse effects to significant historic and archaeological resources.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Section 26-27C (950 CMR 70-71) and MEPA (301 CMR 11). If you have questions, please contact Jonathan K. Patton at this office.

Sincerely,



Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc: Denise Bartone, Eversource
Kate Atwood, USACOE-NED
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
David Weeden, Mashpee Wampanoag Tribe
Secretary Matthew A. Beaton, EEA. Attn: Page Czepiga, MEPA Unit
Ellen Berkland, DCR
Patrice Kish, DCR
Local Historical Commissions; Towns of Sudbury, Marlborough, Stow and Hudson
Sudbury Historic District Commission
Vivian Kimball, VHB, Inc.
Marty Dudek, Commonwealth Heritage Group



The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

December 18, 2019

Barbara Newman
Chief, Permits and Enforcement Branch
Regulatory Division
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

RE: Sudbury-Hudson Transmission Reliability Project, Sudbury, Marlborough, Stow and Hudson, MA.
MHC #RC.62384. EEA #15703.

Dear Ms. Newman:

Staff of the Massachusetts Historical Commission (MHC), have reviewed additional information that was prepared and submitted by VHB, Inc., for the project referenced above.

The additional information indicates that the project has incorporated measures to avoid and minimize adverse effects to historic and archaeological resources to the extent feasible. Consultation with the Hudson and Sudbury Historical Commission has been conducted by the project proponent. The MHC looks forward to reviewing the Corps' findings and determinations for the project pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800). Copies of any comments from other consulting parties on the project as currently proposed should be submitted to the MHC.

The project as currently proposed continues to include modification of abutments and demolition of architectural elements of the Massachusetts Central Railroad Bridges #127 (MHC #SUD.901) in Sudbury and the Fort Meadow Brook Railroad Bridge/ Bridge 130 (MHC #HUD.908) in Hudson. Project impacts to the two bridges referenced above constitute an adverse effect (36 CFR 800.5(a)(2)(i); 950 CMR 71.05) to the bridges within the potential Central Massachusetts Railroad Historic District.

The MHC recommends that the Corps make an adverse effect finding, notify the Advisory Council on Historic Preservation (ACHP) (36 CFR 800.6 (a)(1)), and provide the documentation specified in 36 CFR 800.11(e). The draft Memorandum of Agreement (MOA) for the project should specify measures agreed to in consultation and adopted by the project proponent to avoid, minimize and mitigate adverse effects to significant historic and archaeological resources. The draft MOA should include the most current project plans as an appendix, including design changes referenced in the VHB memorandum dated October 23, 2019 specifying individual site avoidance and protection measures.

The MHC suggests that the draft MOA include the following stipulations:

- The development and implementation of the archaeological site avoidance and protection plan for significant historic and archaeological resources, including the George Pitt Tavern Historic District (SUD.P), the Boston and Maine Railroad Section Tool House (SUD.282) and significant archaeological resources. The draft written archaeological site avoidance and protection plan, including stipulations for fencing, signage and contractor

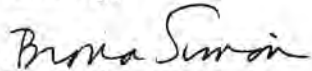
briefings, should be prepared by CHG using the most current project plans and submitted to the consulting parties for review and comment. Plans should reflect feasible integration of rest stops at the Gleasondale Station Site (MHC #HUD.HA.8), Ordway Station Site (HUD.HA.9), as requested by the Hudson Historical Commission.

- The development and implementation of design specifications and details for the proposed removal and resetting of railroad features, including whistle posts, rail rests, auto highway flashers, block signals, and mile markers, etc., consistent with Secretary of the Interior's Standards and Guidelines for Rehabilitation (36 CFR 67), to avoid adverse effects to the historic railroad features. Current project plans should include specifications and details for railroad feature removal and re-setting, including protection during removal and short term storage, if required.
- Mitigation measures for the Central Massachusetts Railroad historic district, including Bridge 130 on Fort Meadow Brook in Hudson; and Bridge 128 and Bridge 127 on Hop Brook in Sudbury. The MHC suggests that mitigation measures for bridges include photodocumentation to HABS/HAER standards, the production of updated MHC Inventory forms, and the development and installation of interpretive panels at each bridge that describe the history of the bridges and Massachusetts Central Railroad. Draft interpretive panel layout and content should be provided to the consulting parties for review and comment. The development and implementation of a mobile app/web-based platform for rail trail users to access railroad history is also recommended in consultation with the Hudson and Sudbury Historical Commissions.

The MHC looks forward reviewing the information requested above and to continued consultation to avoid, minimize and mitigate adverse effects to significant historic and archaeological resources.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Section 26-27C (950 CMR 70-71) and MEPA (301 CMR 11). If you have questions, please contact Jonathan K. Patton at this office.

Sincerely,



Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc: Denise Bartone, Eversource
Brooke Kenline-Nyman, Eversource
Kate Atwood, USACOE-NED
Anthony Guy Lopez, ACHP
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
David Weeden, Mashpee Wampanoag Tribe
Secretary Kathleen A. Theoharides, EEA. Attn: Page Czepiga, MEPA Unit
Patrice Kish, DCR
Local Historical Commissions: Towns of Sudbury, Marlborough, Stow and Hudson
Sudbury Historic District Commission
Vivian Kimball, VHB, Inc.
Marty Dudek, Commonwealth Heritage Group

Appendix G: Rare, Threatened, and Endangered Species Documentation

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>



In Reply Refer To:

July 26, 2020

Consultation Code: 05E1NE00-2020-SLI-3451

Event Code: 05E1NE00-2020-E-10507

Project Name: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2020-SLI-3451

Event Code: 05E1NE00-2020-E-10507

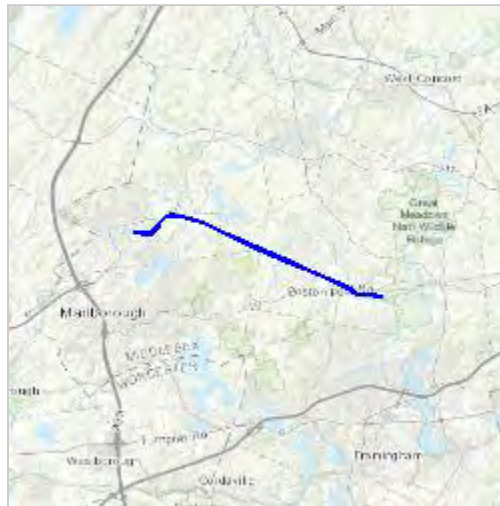
Project Name: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Project Type: ** OTHER **

Project Description: New underground electric transmission line and rail trail within the same inactive railroad corridor.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.37721942601634N71.46529266326996W>



Counties: Middlesex, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
<http://www.fws.gov/newengland>



In Reply Refer To:

July 26, 2020

Consultation Code: 05E1NE00-2020-TA-3451

Event Code: 05E1NE00-2020-E-10508

Project Name: Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

Subject: Verification letter for the 'Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Vivian Kimball:

The U.S. Fish and Wildlife Service (Service) received on July 26, 2020 your effects determination for the 'Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"^[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

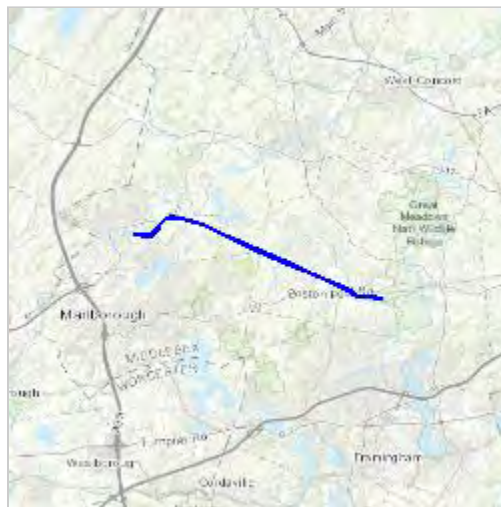
Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project

2. Description

The following description was provided for the project 'Sudbury-Hudson Transmission Reliability and Mass Central Rail Trail Project':

New underground electric transmission line and rail trail within the same inactive railroad corridor.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.37721942601634N71.46529266326996W>

**Determination Key Result**

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?
Yes
2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")
No
3. Will your activity purposefully **Take** northern long-eared bats?
No
4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?
Automatically answered
No
5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

No

7. Will the action involve Tree Removal?

Yes

8. Will the action only remove hazardous trees for the protection of human life or property?

No

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

24.21

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

Appendix H: Vernal Pool Documentation

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Vernal Pools Identified on and Adjacent to the MBTA ROW

Vernal Pool ID	Vernal Pool Flag Sequence	Associated Wetland	General Location Description	Plan Set Page(s)	Observations by Year			NHESP CVP	NHESP Certifiable	Photo ID	Comments
					2015	2016	2017				
VP-1	HVP1-1 - HVP1-12	16	On north side of MBTA rail line, approximately 80' east of White Pond Road.	22	2+ egg masses	5/11/16, 2 Spotted Salamander (<i>Ambystoma maculatum</i>) egg masses	4/24/2017, Spotted salamander egg mass (4), fairy shrimp, (thousands) caddisfly larvae, amphipods, 2 young bull frogs (<i>Lithobates catesbeianus</i>)	Yes	N/A	1 - 4	Mostly located on DOD's land. Observed dry August, September and October 2017
VP-2	HVP2-8 - HVP2-14	17	On south side of MBTA rail line, approximately 850' east of White Pond Road.	22	No data	5/11/16, 3 Wood frog tadpoles (3) (<i>Lithobates sylvaticus</i>), 2 small green frogs (<i>Lithobates clamitan</i>), gray tree frog (<i>Hyla versicolor</i>) vocalizations, isopods, Dyticid beetle larvae, water mites, few green frog vocalizations	One small green frog	No	Yes	5 and 6	Observed dry August, September and October 2017
VP-3	HVP15- HVP23	19	On North side of MBTA rail line, approximately 450' west of Hudson/Sudbury town line.	23	Wood frog tadpoles present, 2+ <i>Ambystoma sp.</i> salamander egg masses	5/12/16, Wood frog tadpoles abundant	4/24/2017, Spotted salamander egg mass (4), fairy shrimp, spring peeper (<i>Pseudacris crucifer</i>) calls	Yes	N/A	7 - 10	Mostly located on USFWS' land. Observed dry August, September and October 2017
VP-1	DW1-DW19	3	Approximately 150" West of Sudbury Substation access road, north side of MBTA ROW	39-40	No organisms found	No organisms found	Snails (<i>Lymnaeidae</i>) and amphipods	N	?	1-5	Limited access from MBTA ROW to fully evaluate wetland. Sudbury Conservation Commission agent appears to have identified this basin as a vernal pool in EFSB written testimony.
VP-2	DSVP1- DSVP12	5	Approximately 1300' west of Landham Road, north of MBTA ROW	36-37	Wood frog tadpoles	5/18/16 Green Frog adult and invertebrates	5/2/17, Green frog, amphipods, annelids	N	Y	6-9	
VP-3	DSVP13- DSVP19	8	Approximately 1000' west of Landham Road, north of MBTA ROW	36	Lots of algae and leaves on surface, No tadpoles	5/18/16 Green Frog adult and invertebrates	5/2/17 Green frog, leopard frog adult, isopods, pleurobid snail, beetle larvae, caddis fly larvae, isopods	N	N	10-13	
VP-4	CSVP1- CSVP6	9	Approximately 1100' west of Landham Road, north of MBTA ROW	36	Green frog	5/18/16 <i>Ambystoma sp.</i> Larva	5/2/17, Green frog, amphipods, mosquito larvae, caddisfly larvae	N	Y	14-17	
VP-5	DW214- DW216	24A	Approximately 300 feet west of Union Avenue, north side of MBTA ROW	27-28				N	?	18-19	No access from ROW to evaluate wetland. Sudbury Conservation Commission agent appears to have identified this basin as a vernal pool in EFSB written testimony.

Vernal Pool ID	Vernal Pool Flag Sequence	Associated Wetland	General Location Description	Plan Set Page(s)	Observations by Year			NHESP CVP	NHESP Certifiable	Photo ID	Comments
					2015	2016	2017				
VP-6	CSVP24-CSVP29	27	Approximately 400' east of Horse Pond Road, south side of ROW	21	Hundreds of wood frog tadpoles	5/19/16 Wood Frog tadpoles	Wood frog tadpoles (hundreds), amphipods, ostricods, caddid fly larvae	N	Y	20-24	
VP-7	DSVP40-DSVP45	34	Approximately 150 west of Peakham Road, north side of ROW	16	Fairy shrimp, Hundreds of wood frog tadpoles, caddisfly larvae	5/12/16 Wood Frog tadpoles	5/2/17, no vertebrates, mosquito larvae	N	Y	25-27	
VP-8	DSVP34-DSVP39	35	Approximately 550 west of Peakham Road, north side of ROW	15	Thousands of wood frog tadpoles, caddisfly larvae	5/12/16 Green Frog adult and mosquito larvae	5/2/17, no vertebrates, mosquito larvae, chironomid midge larvae	N	Y	28-29	
VP-9	DW117-DW121	39	Approximately 150' west of Dutton Road, north of MBTA ROW	11	n/a	n/a	n/a	Y	Y	30	No access from ROW to evaluate wetland. Sudbury Conservation Commission agent appears to have identified this basin as a vernal pool in EFSB written testimony.
VP-10	DSVP30-DSVP33	40	Approximately 300 feet west of Dutton Road, north side of ROW	11	n/a	n/a	4-24-17 Ambystoma egg mass and fairy shrimp	N	Y	31-33	Limited access from MBTA ROW, mostly off site on Sudbury town land
VP-11	CSVP7-CSVP23	42	Approximately 450 feet west of Dutton Road, north side of ROW	10	n/a	5/12/16 Green Frog adult and caddisflies	4/24/17, Green frog, mosquito larvae	N	N	34-35	
VP-12	DW105-DW111	41	Approximately 550 feet west of Dutton Road, north side of ROW	10				N	?		No access from ROW to evaluate wetland. Sudbury Conservation Commission agent appears to have identified this basin as a vernal pool in EFSB written testimony.
VP-13	DSVP20-DSVP29	43	Approximately 750 feet west of Dutton Road, south side of ROW	10	n/a	6/1/16 Wood Frog tadpoles	4-24-17 Wood frog egg masses (few)	N	Y	36-39	Gray tree frog vocalizations heard in area

Hudson



Photo 1 *Vernal Pool 1, 2017*



Photo 2 *Vernal Pool 1, 2017. Ambystoma egg mass and fairy shrimp.*



Photo 3 *Vernal Pool 1, 2017.* Fairy shrimp.



Photo 4 *Vernal Pool 1, 2017.* Caddis fly cases.



Photo 5 *Vernal Pool 2, 2017*



Photo 6 *Vernal Pool 2, 2016. Wood frog tadpole.*



Photo 7 *Vernal Pool 3, 2017*



Photo 8 *Vernal Pool 3, 2016*



Photo 9 *Vernal Pool 3, 2017. Ambystoma egg mass and fairy shrimp.*



Photo 10 *Vernal Pool 3, 2016. Wood frog tadpoles.*

Sudbury



Photo 11 *Vernal Pool 1, 2015*



Photo 17 *Vernal Pool 1, 2016*



Photo 18 *Vernal Pool 1, 2017*



Photo 19 *Vernal Pool 1, 2017. Snail (Lymnaeidae)*



Photo 110 *Vernal Pool 1, 2017. Amphipod.*



Photo 111 *Vernal Pool 2, 2015*



Photo 112 *Vernal Pool 2, 2016*



Photo 113 *Vernal Pool 2, 2017*



Photo 114 *Vernal Pool 2, 2017. Green Frog.*



Photo 15 *Vernal Pool 3, 2015*



Photo 16 *Vernal Pool 3, 2016*



Photo 17 *Vernal Pool 3, 2017. Caddis fly larvae.*



Photo 23 *Vernal Pool 3, 2017.* Isopod.



Photo 18 *Vernal Pool 4, 2015*



Photo 19 Vernal Pool 4, 2016



Photo 20 Vernal Pool 4, 2016. *Ambystoma* sp. larvae.



Photo 21 *Vernal Pool 4, 2017*



Photo 22 *Vernal Pool 5, 2015*



Photo 23 *Vernal Pool 5, 2016*



Photo 24 *Vernal Pool 6, 2016*



Photo 25 *Vernal Pool 6, 2016*



Photo 26 *Vernal Pool 6, 2017*



Photo 33 *Vernal Pool 6, 2017.* Caddis fly larvae and ostracods.

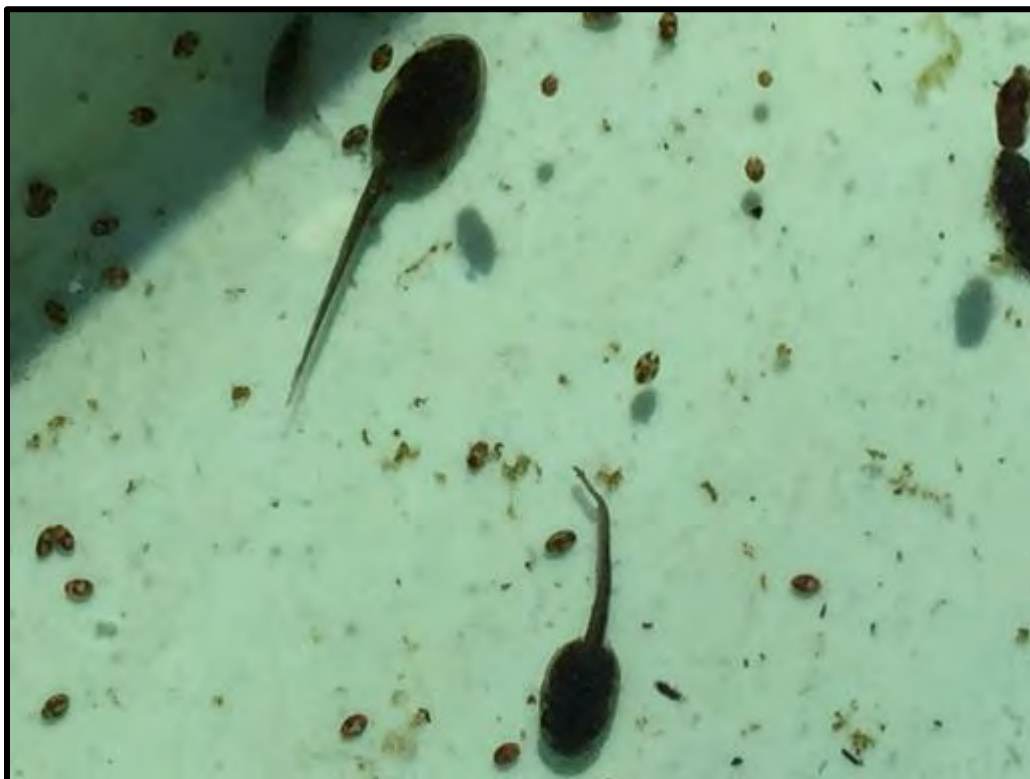


Photo 27 *Vernal Pool 6, 2017.* Wood frog tadpoles and ostracods.



Photo 28 *Vernal Pool 7, 2016*



Photo 29 *Vernal Pool 7, 2016. Wood frog tadpoles.*



Photo 30 *Vernal Pool 7, 2017*



Photo 31 *Vernal Pool 8, 2016*



Photo 32 *Vernal Pool 8, 2017*



Photo 40 *Vernal Pool 9, 2016*



Photo 41 *Vernal Pool 10, 2016*



Photo 33 *Vernal Pool 10, 2017*



Photo 34 *Vernal Pool 10, 2017. Ambystoma egg mass and fairy shrimp.*



Photo 44 *Vernal Pool 11, 2016*



Photo 35 *Vernal Pool 11, 2017*



Photo 46 *Vernal Pool 13, 2016*



Photo 36 *Vernal Pool 13, 2017.* Wood frog tadpoles.



Photo 37 *Vernal Pool 13, 2017*



Photo 38 *Vernal Pool 13, 2017.* Wood frog egg mass.