

# WEST ENVIRONMENTAL INC.



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Stephanie Giallongo  
NHDES Wetlands Bureau  
PO Box 95  
Concord, NH 03302-0095

December 15, 2020

**RE: Mulhern Subdivision, Durham, NH**

**SUBJ: Wetland Assessment Report**

Dear Stefanie:

West Environmental, Inc. (WEI) prepared this report to document the Wetland Classification, Description, Plant communities and Functional Assessment of the proposed Open Space Subdivision off Gerrish Drive. Field work was conducted in May, June, September, and November 2020. The 16-acre woodland site is located between Ambler Way and Route 108 along the Madbury Town line including two acres in Madbury. No Vernal Pools were observed on this site during our spring inspections.

### **Wetland Classification, Description and Plant Communities**

The wetlands were classified according to Cowardin System of Classification 1979. Wetlands were separated into four components that are identified on the attached existing conditions plan prepared by MJS Engineering, P.C.

Wetland 1 is classified as PFO1/SS1E Palustrine Forested broad-leaved deciduous/Scrub-shrub broad-leaved deciduous seasonally flooded/saturated. This is a 0.61-acre wooded swamp with a thick shrub layer associated with two intermittent streams with 2-3-foot-wide channels that combine into a 4-6-foot-wide channel that flows into the perennial stream on the northwest property boundary. The stream substrates are mud, silt, and stone. This wetland receives runoff from the adjacent subdivision upslope and includes a roadside ditch and a second tributary from the west. The downstream portion shows erosion in the stream channel due to flow velocity.

*Trees* red maple and quaking aspen

*Saplings* speckled alder and common buckthorn\*

*Shrubs* musclewood, glossy buckthorn\*, multi-flora rose\*, honeysuckle\*, wild raisin and privet\*.

*Herbs* sensitive fern, sedges, horsetail, jewelweed, goldenrod, and grasses.

*\*denotes invasive species*

*Wildlife* American robin, chickadee, and green frog.

Algae observed in stream channel indicates excess nutrients are present.

Wetland 2 is classified as PFO4/1C Palustrine Forested needle leaved evergreen/broad-leaved deciduous seasonally flooded.

This is a larger perennial stream with only 0.18 acres and 150 linear feet of stream channel onsite. It has a 400-acre watershed and is a tributary to Gerrish Brook located approximately 1,000 feet downstream. The 8 to 12 feet wide with a 20-foot-wide floodplain. There are steep slopes and no adjacent wetlands other than the floodplain. Stream substrate is boulder, cobble gravel and silt.

*Trees* hemlock, white pine, black birch, and red maple.

*Saplings* musclewood and hemlock

*Shrubs* not present

*Herbs* sparse Christmas fern and jewelweed

*Wildlife* Deer Tracks, Raccoon tracks, green frog, wood thrush, and black-throated green warbler.

Wetland 3a and 3b is classified as PFO1/4E Palustrine Forested broad-leaved deciduous/ needle leaved evergreen seasonally flooded/saturated

This wetland includes a broad sloping forested wetland with groundwater seeps and two small shallow, intermittent stream channels 1-2-foot wide that merge into one 4-foot-wide channel before it empties into the perennial stream. The two upper stream channels have mud and silt substrates with diffuse flow and the downstream channel has a boulder, cobble gravel bottom.

*Trees* red maple, white pine, and American elm

*Saplings* red maple, American Elm, musclewood and hemlock

*Shrubs* speckled alder, glossy buckthorn\*, multi-flora rose\*, honeysuckle\*, wild raisin, barberry\* burning bush, winterberry, meadowsweet, and American beech

*Herbs* sensitive fern, sedges, horsetail, jewelweed, buttercup, cinnamon fern, bedstraw goldenrod, violets, and grasses.

*Wildlife* deer, phoebe, great horned owl, blue jay, chipmunk, turkey, and yellow-bellied sapsucker.

Wetland 4 is classified as PFO4E Palustrine Forested needle leaved evergreen seasonally flooded /saturated. This finger of Wetland 3a is a sloping swale with no stream channel and a sparse shrub and herb layer.

*Trees* hemlock, white pine, black birch, and red maple.

*Saplings* hemlock

*Shrubs* none present

*Herbs* sparse sedges

*Wildlife* Raven overhead

### **Wetland Functional Assessment**

Four wetland systems were evaluated for this project and this information is contained in the Wetlands Functional Assessment Worksheets for each wetland. Details of the data presentation and methodology are described below. All work was performed by Mark West NH Certified Wetland Scientist who has over 30 years of experience evaluating more than one thousand wetlands in New Hampshire.

We have included plant community and hydrology descriptions for each wetland above. A photolog of the various wetland components is included to illustrate the physical features of each wetland. The wetland systems were evaluated utilizing a US Army Corps of Engineers New England Divisions Highway Methodology Workbook Supplement. This evaluation is based on collection of data on the physical characteristics of the wetland through field inspections, research of existing information and best professional judgment. This methodology provides a better understanding of each wetland for both its functions and values. Rationale is included on Appendix A.

Wetlands were evaluated to determine if a function is present. The wetland is then evaluated to determine if the function present is a principal function of that wetland based on comparison to other wetlands in the region and using professional judgment. Wetland Functional Assessment Worksheets are included in Appendix B. This assessment evaluates the following wetland functions:

- ***Ecological Integrity*** - This is an evaluation of the landscape position of the wetland and whether it has significant human disturbance. The Forms for this function are in Appendix C.

- **Groundwater Recharge/Discharge** – This function includes the ability of a wetland to provide recharge of surface water into the ground and/or discharge groundwater into surface waters.
- **Flood-flow Alteration** – This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
- **Sediment/Toxicant/Pathogen Retention** – The presence of this function reduces or prevents degradation of water quality because the wetland acts as a trap for sediments, toxicants, or pathogens.
- **Nutrient Removal/Retention Transformation** – This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering surface waters or aquifers.
- **Product Export** – This function relates to the effectiveness of the wetland to produce food or usable products for human or other living organisms.
- **Sediment/Shoreline Stabilization** – This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
- **Wildlife Habitat** – This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with the wetland and the wetland edge (includes resident and migratory species).
- **Fish and Shellfish Habitat (Freshwater)** This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat

Wetland Values:

**Educational Potential** This value considers the suitability of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research. It is dependent on public access.

**Scenic Quality** This value considers the visual and aesthetic quality or usefulness of the wetland. It is dependent on a view from an accessible location to the public.

**Noteworthiness** This value considers the suitability of the wetland to support threatened or endangered species. The NH Natural Heritage Bureau Report guides the results for this value.

**Uniqueness/Heritage** This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

**Water-based Recreation (Consumptive and Non-Consumptive)** — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish these resources of the wetland.

We have attached the following documents to support this assessment:

1. Existing Conditions Plan with Wetland Identifications
2. Aerial Photo Map of site
3. Photolog of the four wetlands
4. Wildlife Action Plan Map
5. Fish Survey Map
6. NH Natural Heritage Memo

### Principal Functions

Wetland 1: The principal functions of this wetland are **Sediment Trapping and Shoreline Anchoring** with flood storage, nutrient trapping/retention and transformation, and wildlife habitat present.

Wetland 2: The principal functions of this wetland are **Ecological Integrity, Fish and Shellfish Habitat (Freshwater), Flood Storage, Groundwater Discharge, Shoreline Anchoring** and **Wildlife Habitat** with scenic quality and sediment trapping present. This assessment takes into consideration the larger stream system. Although there was no fish survey nearby it is assumed that fish are present within the downstream reaches including Gerrish Brook and Johnson Creek.

Wetland 3a and b: The principal functions of this wetland are **Ecological Integrity, Groundwater Discharge, Nutrient Trapping/Retention and Transformation, Sediment Trapping, Shoreline Anchoring** and **Wildlife Habitat** with flood storage, production export present.

Wetland 4: This wetland has no principal functions other than **Ecological Integrity** and is similar to the surrounding upland. It does provide sediment trapping and wildlife habitat like the surrounding landscape.

The NH Natural Heritage Inventory Rare Species Memo indicated two rare plants located along Gerrish Brook and Johnson Creek approximately a half mile from the site. Neither of the plants were found on the site and one of the species is a 1969 record. The Wildlife Action Plan WAP Map indicates that this site provides Supporting Landscape Habitat.

### **Avoidance and Minimization**

The access to this site is a right-of-way deeded to the Town of Durham in 1972 as part of the original Gerrish Drive and Ambler Way subdivision. This was specifically designed as access to the Mulhern parcel. This location receives stormwater runoff from both roads and is almost entirely wetland and is 275 feet across from Gerrish Road to the uplands. To minimize wetland impacts for the access road to the proposed project retaining walls with a low box culvert are designed to reduce the roadway footprint and allow for continued hydrologic flow. The total wetland impact in this location is 6,680 SF.

A second stream crossing is necessary to access the site and this impact includes an arch pipe that is located at a narrow point in the stream system. This structure will span the stream channel and results in 906 SF of wetland impact.

The third wetland impact is associated with a road crossing of a small wetland finger located within the development envelop of this concentrated pocket neighborhood subdivision. This is the lowest functioning wetland on the site and there will be 1,431 SF of wetland impact at this location.

These three wetlands impacts total 9,017 SF and this qualifies the project as a Minor NHDES Wetland Application.

This completes our report. Please call our office if you have any questions or require additional information.

Sincerely,  
West Environmental, Inc.

A handwritten signature in black ink, appearing to read 'M. West', with a long horizontal flourish extending to the right.

Mark C. West,  
NH Certified Wetland Scientist #10

Cc: Mike Sievert MJS Engineering PLLC  
Mike Mulhern



**WETLANDS FUNCTIONAL ASSESSMENT  
WORKSHEET**  
Water Division/Land Resource Management  
Wetlands Bureau



**RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10**

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Written Narrative (NHDES-W-06-089) or Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached with the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

<b>SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)</b>	
ADJACENT LAND USE: <i>Residential &amp; woodland</i>	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>lower portion has wooded buffer.</i>	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): <i>5'</i>	
<b>SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: <i>Mark C. West NH-CWS # 10</i>	
DATE(S) OF SITE VISIT(S): <i>Phase June, Sept, Nov.</i>	DELINEATION PER ENV-WT 406 COMPLETED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
CONFIRM THAT THE EVALUATION IS BASED ON:	
<input checked="" type="checkbox"/> Office and	
<input checked="" type="checkbox"/> Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"):	
<input checked="" type="checkbox"/> USACE Highway Methodology. <i>+ NH Method for Ecological Integrity</i>	
<input type="checkbox"/> Other scientifically supported method (enter name/ title):	
<b>SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
WETLAND ID: <i>1</i>	LOCATION: (LAT/LONG) <i>43°08'57.1"N 70°54'32.39"W</i>

[irm@des.nh.gov](mailto:irm@des.nh.gov) or (603) 271-2147

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[www.des.nh.gov](http://www.des.nh.gov)

WETLAND AREA: <i>0.61 Acres</i>	DOMINANT WETLAND SYSTEMS PRESENT: <i>Foreshed.</i>
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? <i>Two</i>	COWARDIN CLASS: <i>PFO1SS1E</i>
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No if not, where does the wetland lie in the drainage basin? <i>high to middle</i>	IS WETLAND PART OF: <input type="checkbox"/> A wildlife corridor, or <input checked="" type="checkbox"/> A Habitat island? <i>Not in corridor but corridor downstream.</i>
IS WETLAND IN A 100-YEAR FLOODPLAIN? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	IS WETLAND HUMAN-MADE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>but human disturbance present.</i>
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>intermittent stream</i>	ARE VERNAL POOLS PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If yes, complete the Vernal Pool Table)
PROPOSED WETLAND IMPACT TYPE: <i>Fill + stream alteration</i>	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/DOWNGRADIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	PROPOSED WETLAND IMPACT AREA: <i>6,680 SF</i>

**SECTION 4 - WETLANDS FUNCTIONS AND VALUES\* (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)**

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE "The Highway Methodology Workbook Supplement". Second, indicate which functions and values are principal (Principal Function/value?" column). As described in The Highway Methodology Workbook Supplement, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Landscape setting compromised. 3.6 score out of 10	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	H2O degradation adjacent roads and houses.
2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Does NOT have any of the qualifiers present for this function except within walking distance of houses.
3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4 → downstream, 8, and 17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Stream is too small to provide fish habitat.
4	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2, 4, 6, 7, 9, 10, 13, 14, 16 and 18.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	incremental flood storage but not a large volume.
5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1, 6, 7, 15	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	sloping wetland.
6	<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
7	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3, 4, 5-, 7, 8, 9, 10, 11, 12-	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lacks organic soils and long hydroperiod.
8	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 4, 7, 8, 12;	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lacks open water, deep or shallow marsh habitat.
9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3, 9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lack Qualifiers mostly dense woodlnd.
10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 3, 4, 5-, 6, 7-, 8, 10, 11, 12-, 14-, 16	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Most important function of this wetland.
11	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 3, 4, 6, 7, 8, 9, 12, 13 14,	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2nd most important function of this wetland.
12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5, 7, 12, 19, 22,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lacks Qualifiers, considering 31 exists.
13	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6, 7, 8, 11, 13, 17, 21,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Not high value habitat.

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# WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management  
Wetlands Bureau



**RSA/Rule:** RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Written Narrative (NHDES-W-06-089) or Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached with the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

<b>SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)</b>	
ADJACENT LAND USE: <i>Woodland on and off site.</i>	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): <i>400+</i>	
<b>SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: <i>Mark C. West NH CWS # 10</i>	
DATE(S) OF SITE VISIT(S): <i>May June Sept. Nov.</i>	DELINEATION PER ENV-WT 406 COMPLETED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
CONFIRM THAT THE EVALUATION IS BASED ON:	
<input checked="" type="checkbox"/> Office and	
<input checked="" type="checkbox"/> Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"):	
<input checked="" type="checkbox"/> USACE Highway Methodology. + <i>with Method for Ecological Integrity</i>	
<input type="checkbox"/> Other scientifically supported method (enter name/ title):	
<b>SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
WETLAND ID: <i>2</i>	LOCATION: (LAT/ LONG) <i>43°09'06.48"N 170°54'35.17"W</i>

WETLAND AREA: 0.18 onsite	DOMINANT WETLAND SYSTEMS PRESENT: PFO1/4E
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? four	COWARDIN CLASS: PFO1/4E Perennial Stream <sup>bordered by forest</sup> floodplains.
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No if not, where does the wetland lie in the drainage basin? Medium	IS WETLAND PART OF: <input checked="" type="checkbox"/> A wildlife corridor, or <input type="checkbox"/> A Habitat island? IS WETLAND HUMAN-MADE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IS WETLAND IN A 100-YEAR FLOODPLAIN? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	ARE VERNAL POOLS PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (if yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/DOWNGRADIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No likely
PROPOSED WETLAND IMPACT TYPE: NONE.	PROPOSED WETLAND IMPACT AREA: 0

**SECTION 4 - WETLANDS FUNCTIONS AND VALUES\* (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)**

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE "The Highway Methodology Workbook Supplement". Second, indicate which functions and values are principal (Principal Function/value?" column). As described in The Highway Methodology Workbook Supplement, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

**SECTION 6 - STREAM RESOURCES SUMMARY**

DESCRIPTION OF STREAM: 25' wide channel w/ woody debris	STREAM TYPE (ROSGEN): "C"
HAVE FISHERIES BEEN DOCUMENTED? <input type="checkbox"/> Yes <input type="checkbox"/> No NO fish and Game Data	DOES THE STREAM SYSTEM APPEAR STABLE? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No but some bank erosion observed.

OTHER KEY ON-SITE FUNCTIONS OF NOTE: Only a small portion of stream onsite.

The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Part of a large stream corridor Scored 9 out of 10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	relatively undisturbed water shed w/ stream buffers
2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	NO access for public	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
3	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 4, 5, 7-8, 10, 14, 16 17. NO fish observed.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	small fish likely present.
4	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5, 6, 8, 9, 10, 11, 13, 14- 16, 17,	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Stream has visible floodplain present.
5	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1 likely, 2, 6, 7, 13 likely, 15	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discharge NOT recharge.
6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Natural Heritage data. negative. NO qualifier.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4, 5, 7, 9-	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Flow through system. minimal vegetation
8	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	2, 4, 5, 6, likely,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	sparse vegetation
9	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	NO public access onsite.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 3-4, 6 likely, 8, 10 12,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	flow through short detention trap.
11	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 3, 4, 6, 7 in places, 8, 9, 14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	most important function w/ wild life habitat.
12	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2, 19, 22, 27, 30 oyster vine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
13	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	NO access onsite	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, onsite, 3, 5, 6, 7, 8, 11, 16, 17 19, 20,	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Most important function

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3a+b.



**WETLANDS FUNCTIONAL ASSESSMENT  
WORKSHEET**  
Water Division/Land Resource Management  
Wetlands Bureau



**RSA/Rule:** RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Written Narrative (NHDES-W-06-089) or Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached with the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

<b>SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)</b>	
ADJACENT LAND USE: <i>Woodland + Residential</i>	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>along eastern boundary</i>	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): <i>200'</i>	
<b>SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: <i>Mark C. West NHCWS #10</i>	
DATE(S) OF SITE VISIT(S): <i>May June Sept Nov.</i>	DELINEATION PER ENV-WT 406 COMPLETED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
CONFIRM THAT THE EVALUATION IS BASED ON:	
<input checked="" type="checkbox"/> Office and	
<input checked="" type="checkbox"/> Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"):	
<input checked="" type="checkbox"/> USACE Highway Methodology. <i>+ Nt Method for Ecological Integrity</i>	
<input type="checkbox"/> Other scientifically supported method (enter name/ title):	
<b>SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
WETLAND ID: <i>3a+b</i>	LOCATION: (LAT/LONG) <i>43°08'53.38"N 170°54'28.55"W</i>

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WETLAND AREA: <i>4.05 acres.</i>	DOMINANT WETLAND SYSTEMS PRESENT: <i>PFOIE</i>
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? <i>Two</i>	COWARDIN CLASS: <i>PFOIE</i>
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No if not, where does the wetland lie in the drainage basin? <i>High</i>	IS WETLAND PART OF: <input checked="" type="checkbox"/> A wildlife corridor, or <input type="checkbox"/> A Habitat island? IS WETLAND HUMAN-MADE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IS WETLAND IN A 100-YEAR FLOODPLAIN? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	ARE VERNAL POOLS PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
PROPOSED WETLAND IMPACT TYPE: <i>Arch Pipe crossing</i>	PROPOSED WETLAND IMPACT AREA: <i>906 SF</i>

**SECTION 4 - WETLANDS FUNCTIONS AND VALUES\* (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)**

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE "The Highway Methodology Workbook Supplement". Second, indicate which functions and values are principal (Principal Function/value?" column). As described in The Highway Methodology Workbook Supplement, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	good size forested drainage score 7.5 out of 10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Most of buffer is in fact.
2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	2, 5,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lacks Qualifiers and access.
3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1, 4, 7, 8, 14 seasonal, 17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Too small a stream to support fish. No fish observed.
4	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 3, 5, 7, 8, 9, 10, 13, 14 16, 18.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Entire wetland is sloping with no basin
5	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 6, 7, 10, 13, 14, 15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discharge observed.
6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No rare species documented or observed.
7	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Two diffuse stream channels w/ organic soils. + dense veg.
8	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 4, 5, 7, 8, 12,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4, 7, 8	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No accessible viewing areas
10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	diffuse flow to organic soils present.
11	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 2, 3, 5-6 channels, 7, 9, 12, 13, 14, 15	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Most important function of this wetland.
12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4, 5, 7, 15, 17, 18, 19, 22,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lacks enough qualities to be unique.
13	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4, 6, 11, 12,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1-2, 3, 5, 6, 7, 8, 11, 13, 14, 15, 16, 17,	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	good habitat includes aquatic habitat.



**WETLANDS FUNCTIONAL ASSESSMENT  
WORKSHEET**  
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Wetlands Bureau



**RSA/Rule:** RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Written Narrative (NHDES-W-06-089) or Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached with the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

<b>SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)</b>	
ADJACENT LAND USE: <i>woodland</i>	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): <i>350'</i>	
<b>SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: <i>Mark C. West NH-CWS # 10</i>	
DATE(S) OF SITE VISIT(S): <i>May June Sept Oct.</i>	DELINEATION PER ENV-WT 406 COMPLETED? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
CONFIRM THAT THE EVALUATION IS BASED ON:	
<input checked="" type="checkbox"/> Office and	
<input checked="" type="checkbox"/> Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"):	
<input checked="" type="checkbox"/> USACE Highway Methodology. <i>+ NH Method for EcoIntegrity.</i>	
<input type="checkbox"/> Other scientifically supported method (enter name/ title):	
<b>SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)</b>	
WETLAND ID: <i>4</i>	LOCATION: (LAT/LONG) <i>43°08'54.61"N / 70°54'25.52"W</i>

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WETLAND AREA: 0.08 acres.	DOMINANT WETLAND SYSTEMS PRESENT: PFO4E
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? One	COWARDIN CLASS: Hemlock Wooded Swamp PFO4E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No if not, where does the wetland lie in the drainage basin? very high connected to wetland 3a	IS WETLAND PART OF: <input type="checkbox"/> A wildlife corridor, or <input checked="" type="checkbox"/> A Habitat island? IS WETLAND HUMAN-MADE? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IS WETLAND IN A 100-YEAR FLOODPLAIN? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	ARE VERNAL POOLS PRESENT? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/DOWNGRADIENT? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No likely
PROPOSED WETLAND IMPACT TYPE: Fill	PROPOSED WETLAND IMPACT AREA: 1,431SF

**SECTION 4 - WETLANDS FUNCTIONS AND VALUES\* (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)**

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4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
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6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE "The Highway Methodology Workbook Supplement". Second, indicate which functions and values are principal (Principal Function/value?" column). As described in The Highway Methodology Workbook Supplement, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

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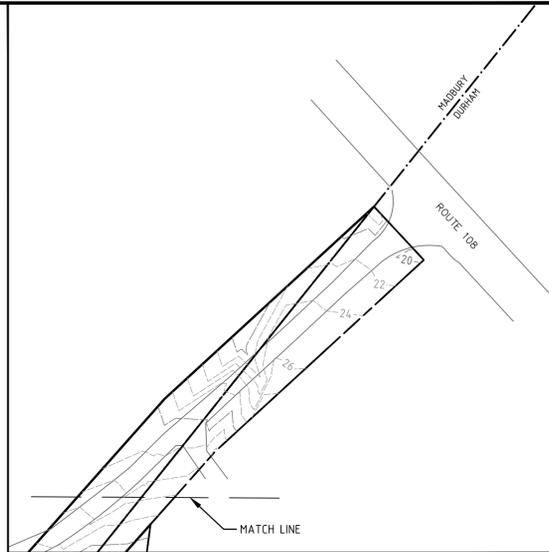
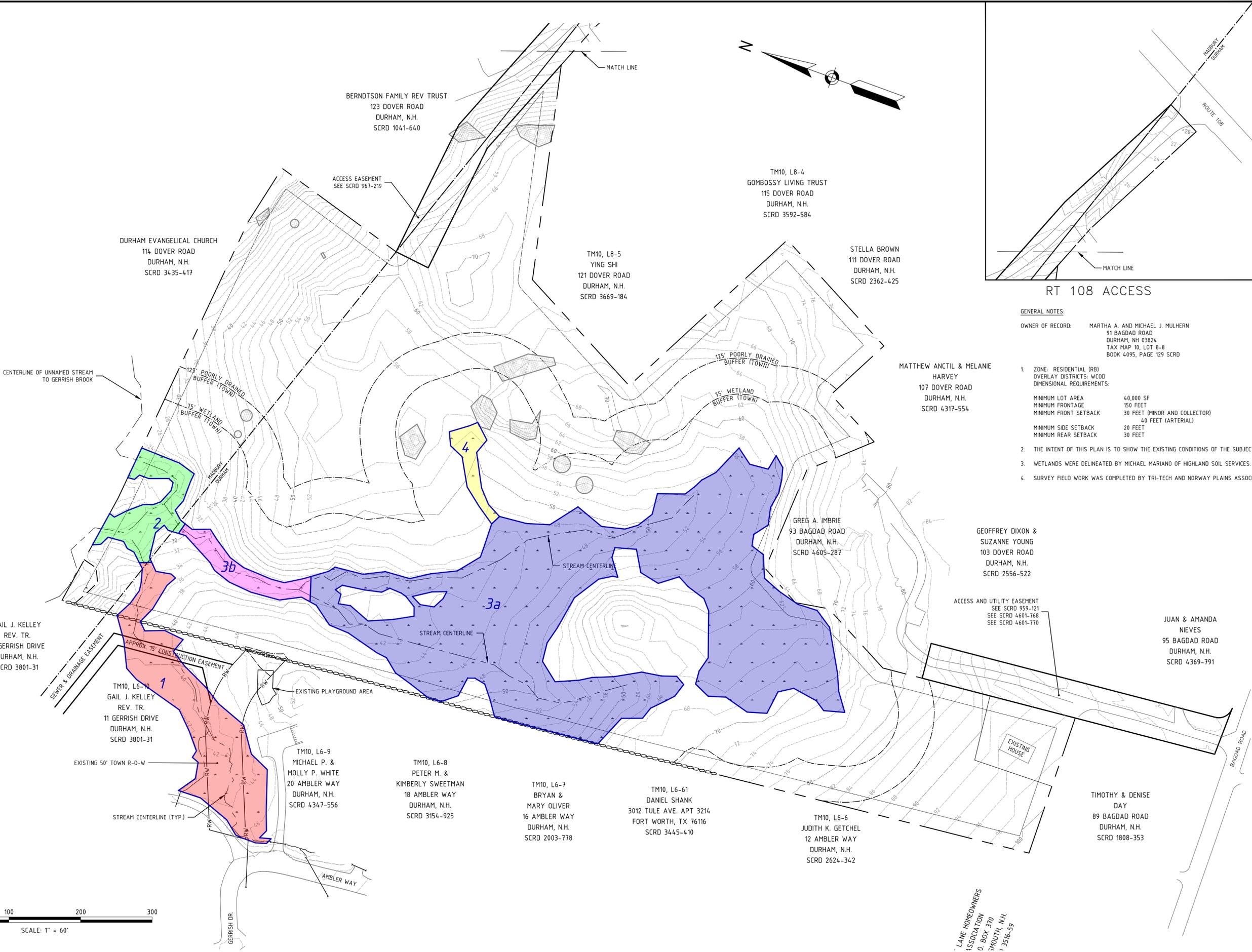
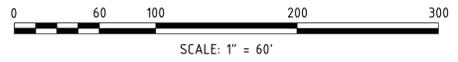
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FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Intact habitat. 10 out of 10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	undisturbed buffers
2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	2,	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	NO access.
3	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1, 4, 8	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<del>Site</del> No stream exists.
4	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	2, 5, 9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Wetland does not flood and is sloping
5	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1, 2 possibly, 6 lodge, 10, 15.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No springs observed.
6	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Small marginal wetland.
7	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3, 7.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No herb layer sparse vegetation short residual fine for water.
8	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No qualifiers exist.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Marginal wetland. low vegetation density
9	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No qualifiers	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Wetland is similar to surrounding woodland.
10	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4 6 potentially 7, 8	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Lacks vegetation density in herb layer. sloping topography
11	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	2, No other qualifiers	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No stream channel present.
12	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No qualifiers	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
13	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	No qualifiers open water or access	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
14	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1, 3, 4, 5, 6, 7, 11	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Wetland lacks plant community diversity and habitat diversity

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- GENERAL NOTES:**
- OWNER OF RECORD: MARTHA A. AND MICHAEL J. MULHERN  
91 BAGDAD ROAD  
DURHAM, NH 03824  
TAX MAP 10, LOT 8-8  
BOOK 4095, PAGE 129 SCR.D
1. ZONE: RESIDENTIAL (RB)  
OVERLAY DISTRICTS: WOOD  
DIMENSIONAL REQUIREMENTS:  
MINIMUM LOT AREA 4,000 SF  
MINIMUM FRONTAGE 150 FEET  
MINIMUM FRONT SETBACK 30 FEET (MINOR AND COLLECTOR)  
MINIMUM SIDE SETBACK 40 FEET (ARTERIAL)  
MINIMUM REAR SETBACK 20 FEET  
MINIMUM REAR SETBACK 30 FEET
  2. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF THE SUBJECT LOT.
  3. WETLANDS WERE DELINEATED BY MICHAEL MARIANO OF HIGHLAND SOIL SERVICES.
  4. SURVEY FIELD WORK WAS COMPLETED BY TRI-TECH AND NORWAY PLAINS ASSOCIATES.

NO.	REVISIONS	DATE	INT.
0.	INITIAL SUBMISSION TO DURHAM PLANNING BOARD	4/10/20	PICS

DATE ISSUED:	4/7/20
SCALE:	1"=60'
DESIGNED BY:	MJS
DRAWN BY:	MJS
APPROVED BY:	MJS
DWG FILE:	

**EXISTING CONDITIONS PLAN**  
prepared for  
**MULHERN**  
MAP 10, LOT 8-6  
93 BAGDAD ROAD  
DURHAM, NH 03824

**MJS ENGINEERING, P.C.**  
CIVIL • STRUCTURAL • ENVIRONMENTAL  
5 Railroad St., P.O. Box 359  
Newmarket, NH 03857  
Phone: (603) 659-4979 Fax: (603) 659-4427  
E-mail: mjs@engr-mjs.com

JOB: 19-063  
**C100**

LANE HOMEOWNERS  
ASSOCIATION  
P.O. BOX 370  
MOUTH, N.H.  
1 3516-59

Mulhern Property

**Legend**

-  Durham Evangelical Church
-  Gerrish Dr



Google Earth

700 ft





1. Looking south at the ditched stream at the corner of Gerrish road and Ambler Way.



2. A close up of the stream channel in Wetland 1.



3. Wetland 1a includes a dense shrub layer with speckled alder.



4. Algal growth is present in the stream channel in May.



5. This is a view of the second stream that flows under the Kelly's driveway.



6. The downstream portion of the stream once the two streams meet is wider with eroding banks.



7. Wetland 2 is a larger unnamed perennial tributary to Gerrish Brook.



8. Looking northeast at Wetland 2 which has steep slopes and flows through the northwest corner of the property.



9. Looking southwest at the upper portion of Wetland 3a.



10. Looking down stream at the east branch of the stream in Wetland 3a.



11. Looking up stream at the west branch of the stream in Wetland 3a.



12. Looking north at Wetland 3b below where the two streams join.

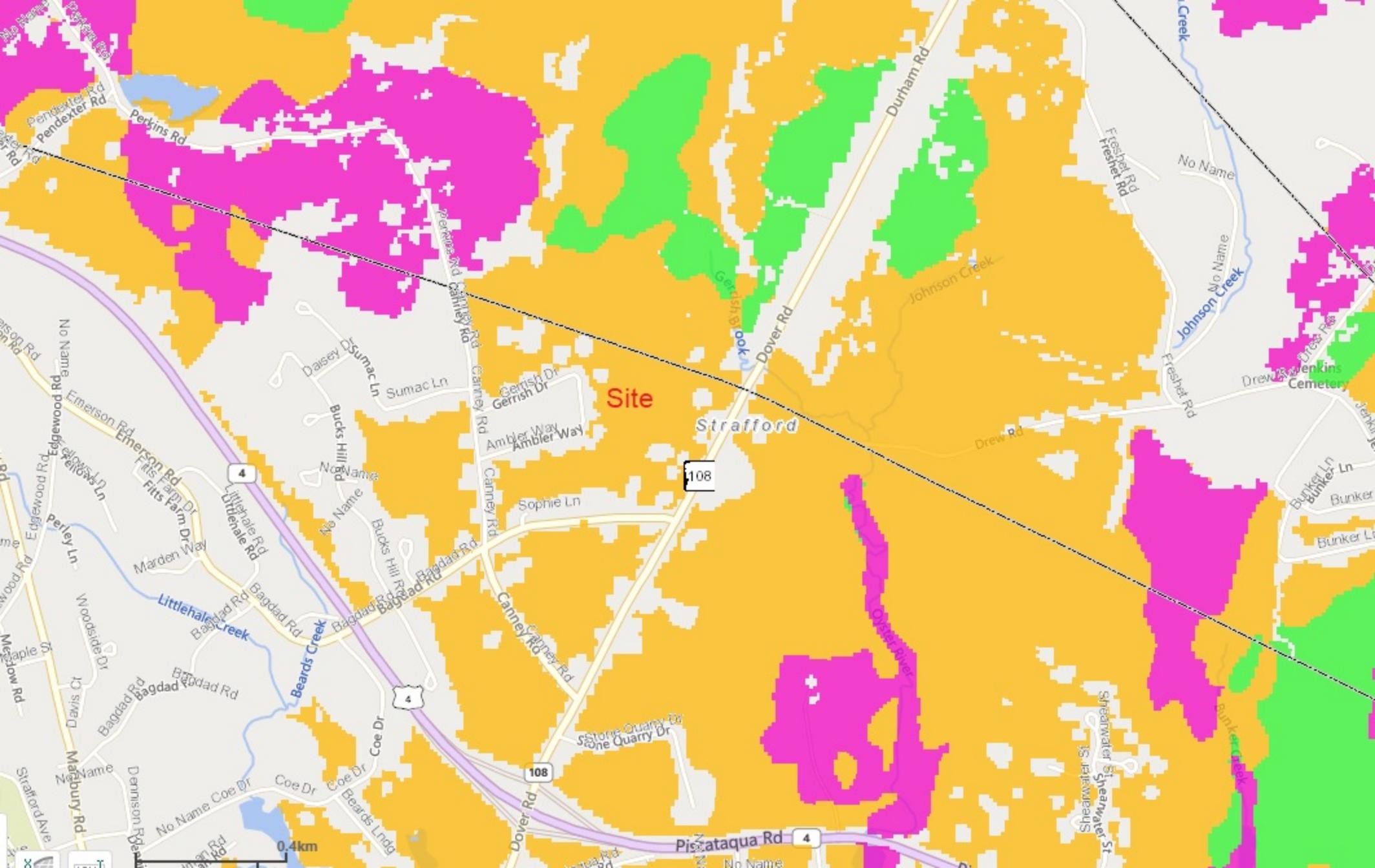


13. This is Wetland 3b showing the side slopes in the fall.



14. Wetland 4 is a hemlock dominated wooded wetland finger connected to Wetland 3a.





Site

Strafford

108

4

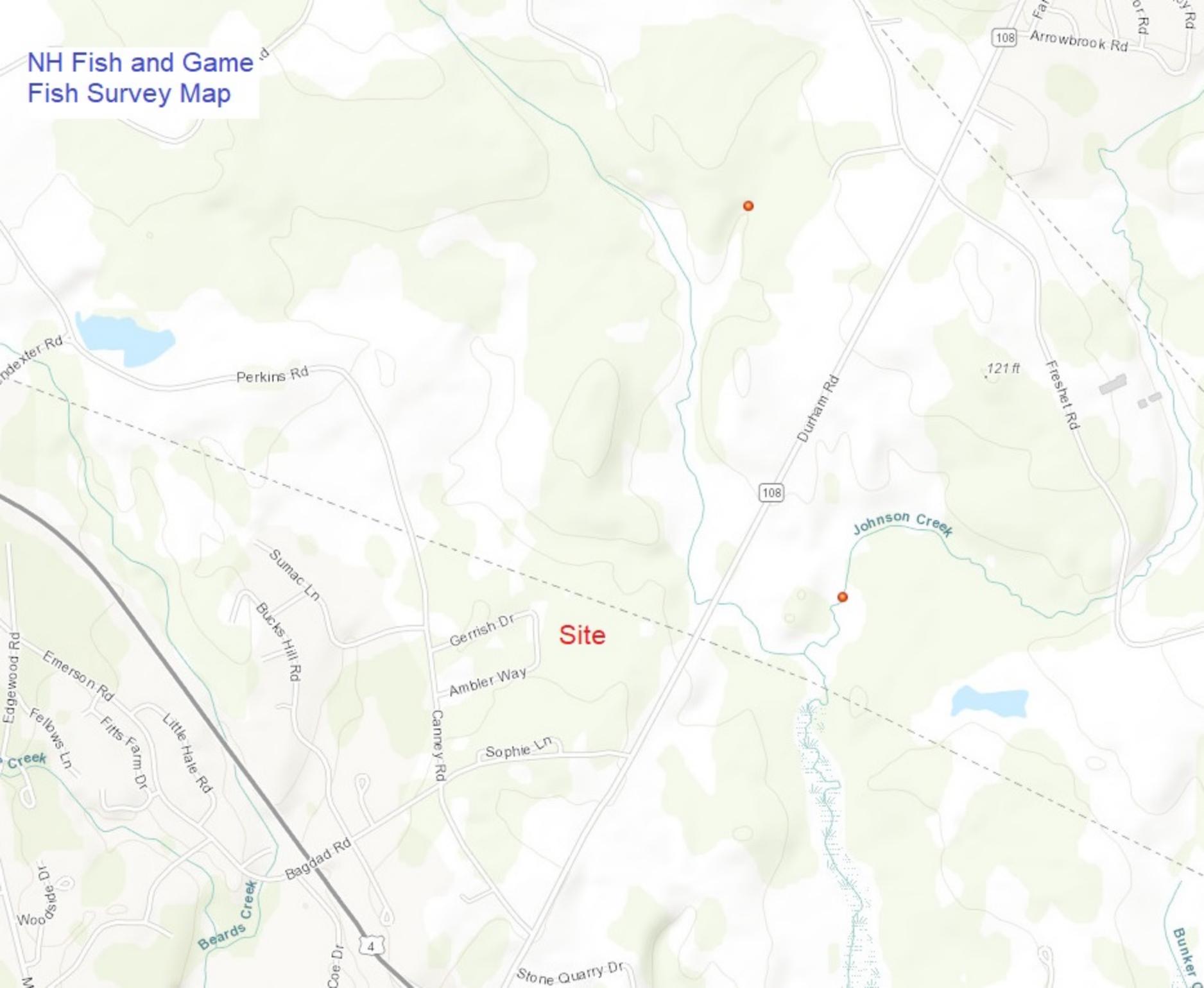
108

Piscataqua Rd

4

0.4km

# NH Fish and Game Fish Survey Map



Site

121 ft

108

4

	A	B	C	D	E	F	G
1	Wetland name/code	1		Date Evaluated:	12/1/2020		
2	Wetland area (acres)	0,61		Evaluated by:	Mark West		
3	Watershed area (acres)	25					
4			<i>Do not enter data into cells highlighted in blue. These cells contain formulas that automatically carry data over from function to function, or total and average functional scores.</i>				
5							
6							
7	<b>1. ECOLOGICAL INTEGRITY</b>	<b>Score</b>	<b>10</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>Notes</b>
8	1. Land uses in watershed that degrade water quality?	1.0	<5% of watershed with such land uses	5-10% of watershed with such land uses	>10% of watershed with such land uses		
9	2. Fill in Wetland?	5.0	Less than 1%	1-3%	>3%		
10	3. Agriculture in wetland?	10.0	Less than 5%	5-25%	> 25%		
11	4. Logging activity in wetland?	10.0	Less than 1%	1-10%	> 10%		
12	5. Human activity in wetland?	1.0	Low	Moderate	High		
13	6. Invasive plants in wetland?	1.0	<1%	1-5%	> 5%		
14	7. Road/driveway/railroad crossings?	1.0	None	within 500ft of wetland	adjacent to or crossing wetland		
15	8. Human activity within 500 ft?	1.0	Little or None	evident in up to 25% of 500 ft zone	evident in more than 25% of 500 ft zone		
16	9. % impervious surface within 500 ft.?	1.0	< 3%	3-10%	>10%		
17	10. Structure regulating water flow?	5.0	None	Slight modification	Severe modification		
18							
19	<b>Average Score - Ecological Integrity</b>	<b>3.6</b>					
20							

	A	B	C	D	E	F	G
1	Wetland name/code	2		Date Evaluated:	12/1/2020		
2	Wetland area (acres)	0.18		Evaluated by:	Mark West		
3	Watershed area (acres)	400					
4			<i>Do not enter data into cells highlighted in blue. These cells contain formulas that automatically carry data over from function to function, or total and average functional scores.</i>				
5							
6							
7	<b>1. ECOLOGICAL INTEGRITY</b>	<b>Score</b>	<b>10</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>Notes</b>
8	1. Land uses in watershed that degrade water quality?	5.0	<5% of watershed with such land uses	5-10% of watershed with such land uses	>10% of watershed with such land uses		
9	2. Fill in Wetland?	10.0	Less than 1%	1-3%	>3%		
10	3. Agriculture in wetland?	10.0	Less than 5%	5-25%	> 25%		
11	4. Logging activity in wetland?	10.0	Less than 1%	1-10%	> 10%		
12	5. Human activity in wetland?	10.0	Low	Moderate	High		
13	6. Invasive plants in wetland?	10.0	<1%	1-5%	> 5%		
14	7. Road/driveway/railroad crossings?	10.0	None	within 500ft of wetland	adjacent to or crossing wetland		
15	8. Human activity within 500 ft?	5.0	Little or None	evident in up to 25% of 500 ft zone	evident in more than 25% of 500 ft zone		
16	9. % impervious surface within 500 ft.?	10.0	< 3%	3-10%	>10%		
17	10. Structure regulating water flow?	10.0	None	Slight modification	Severe modification		
18							
19	<b>Average Score - Ecological Integrity</b>	<b>9.0</b>					
20							

	A	B	C	D	E	F	G
1	Wetland name/code	3a+b		Date Evaluated:	12/1/2020		
2	Wetland area (acres)	4.05		Evaluated by:			
3	Watershed area (acres)	20					
4			<i>Do not enter data into cells highlighted in blue. These cells contain formulas that automatically carry data over from function to function, or total and average functional scores.</i>				
5							
6							
7	<b>1. ECOLOGICAL INTEGRITY</b>	<b>Score</b>	<b>10</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>Notes</b>
8	1. Land uses in watershed that degrade water quality?	5.0	<5% of watershed with such land uses	5-10% of watershed with such land uses	>10% of watershed with such land uses		
9	2. Fill in Wetland?	10.0	Less than 1%	1-3%	>3%		
10	3. Agriculture in wetland?	10.0	Less than 5%	5-25%	> 25%		
11	4. Logging activity in wetland?	10.0	Less than 1%	1-10%	> 10%		
12	5. Human activity in wetland?	10.0	Low	Moderate	High		
13	6. Invasive plants in wetland?	5.0	<1%	1-5%	> 5%		
14	7. Road/driveway/railroad crossings?	5.0	None	within 500ft of wetland	adjacent to or crossing wetland		
15	8. Human activity within 500 ft?	5.0	Little or None	evident in up to 25% of 500 ft zone	evident in more than 25% of 500 ft zone		
16	9. % impervious surface within 500 ft.?	5.0	< 3%	3-10%	>10%		
17	10. Structure regulating water flow?	10.0	None	Slight modification	Severe modification		
18							
19	<b>Average Score - Ecological Integrity</b>	<b>7.5</b>					
20							

	A	B	C	D	E	F	G
1	Wetland name/code	4		Date Evaluated:	12/1/2020		
2	Wetland area (acres)	0.08		Evaluated by:	Mark West		
3	Watershed area (acres)	1.5					
4			<i>Do not enter data into cells highlighted in blue. These cells contain formulas that automatically carry data over from function to function, or total and average functional scores.</i>				
5							
6							
7	<b>1. ECOLOGICAL INTEGRITY</b>	<b>Score</b>	<b>10</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>Notes</b>
8	1. Land uses in watershed that degrade water quality?	10.0	<5% of watershed with such land uses	5-10% of watershed with such land uses	>10% of watershed with such land uses		
9	2. Fill in Wetland?	10.0	Less than 1%	1-3%	>3%		
10	3. Agriculture in wetland?	10.0	Less than 5%	5-25%	> 25%		
11	4. Logging activity in wetland?	10.0	Less than 1%	1-10%	> 10%		
12	5. Human activity in wetland?	10.0	Low	Moderate	High		
13	6. Invasive plants in wetland?	10.0	<1%	1-5%	> 5%		
14	7. Road/driveway/railroad crossings?	10.0	None	within 500ft of wetland	adjacent to or crossing wetland		
15	8. Human activity within 500 ft?	10.0	Little or None	evident in up to 25% of 500 ft zone	evident in more than 25% of 500 ft zone		
16	9. % impervious surface within 500 ft.?	10.0	< 3%	3-10%	>10%		
17	10. Structure regulating water flow?	10.0	None	Slight modification	Severe modification		
18							
19	<b>Average Score - Ecological Integrity</b>	<b>10.0</b>					
20							

# Appendix A

## Wetland evaluation supporting documentation; Reproducible forms.

Below is an example list of considerations that was used for a New Hampshire highway project. Considerations are flexible, based on best professional judgment and interdisciplinary team consensus. This example provides a comprehensive base, however, and may only need slight modifications for use in other projects.

**GROUNDWATER RECHARGE/DISCHARGE**— This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

### CONSIDERATIONS/QUALIFIERS

1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock does occur in the wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
10. Wetland contains only an outlet, no inlet.
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g., springs).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.
17. Other

**FLOODFLOW ALTERATION (Storage & Desynchronization)** — This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

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### CONSIDERATIONS/QUALIFIERS

1. Area of this wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.

3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high percent of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
11. Valuable properties, structures, or resources are located in or near the floodplain downstream from the wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associated with one or more watercourses.
14. This wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.
19. Other

**FISH AND SHELLFISH HABITAT (FRESHWATER)** — This function considers the effectiveness

of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat.

#### CONSIDERATIONS/QUALIFIERS

1. Forest land dominant in the watershed above this wetland.
  2. Abundance of cover objects present.
- STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE**
3. Size of this wetland is able to support large fish/shellfish populations.
  4. Wetland is part of a larger, contiguous watercourse.
  5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.
  6. Stream width (bank to bank) is more than 50 feet.
  7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
  8. Streamside vegetation provides shade for the watercourse.
  9. Spawning areas are present (submerged vegetation or gravel beds).
  10. Food is available to fish/shellfish populations within this wetland.
  11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing) are absent from the stream reach associated with this wetland.
  12. Evidence of fish is present.
  13. Wetland is stocked with fish.
  14. The watercourse is persistent.
  15. Man-made streams are absent.
  16. Water velocities are not too excessive for fish usage.
  17. Defined stream channel is present.
  18. Other

Although the above example refers to freshwater wetlands, it can also be adapted for marine ecosystems. The following is an example provided by the National Marine Fisheries Service (NMFS) of an adaptation for the fish and shellfish function.

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**FISH AND SHELLFISH HABITAT (MARINE)** — This function considers the

effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles.

#### CONSIDERATIONS/QUALIFIERS

1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.
2. Suitable spawning habitat is present at the site or in the area.
3. Commercially or recreationally important species are present or suitable habitat exists.
4. The wetland/waterway supports prey for higher trophic level marine organisms.
5. The waterway provides migratory habitat for anadromous fish.
6. Essential fish habitat, as defined by the 1996 amendments to the Magnuson-Stevens Fishery & Conservation Act, is present (consultation with NMFS may be necessary).
7. Other

**SEDIMENT/TOXICANT/PATHOGEN RETENTION** — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

#### CONSIDERATIONS/QUALIFIERS

1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Fine grained mineral or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in the wetland.

#### STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

10. Wetland is associated with an intermittent or perennial stream or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation by dense vegetation is present.
17. Other

**NUTRIENT REMOVAL/RETENTION/TRANSFORMATION** — This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

#### CONSIDERATIONS/QUALIFIERS

1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists.
3. Overall potential for sediment trapping exists in the wetland.

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4. Potential sources of excess nutrients are present in the watershed above the wetland.

5. Wetland saturated for most of the season. Ponded water is present in the wetland.
  6. Deep organic/sediment deposits are present.
  7. Slowly drained fine grained mineral or organic soils are present.
  8. Dense vegetation is present.
  9. Emergent vegetation and/or dense woody stems are dominant.
  10. Opportunity for nutrient attenuation exists.
  11. Vegetation diversity/abundance sufficient to utilize nutrients.
- STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.
12. Waterflow through this wetland is diffuse.
  13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
  14. Water moves slowly through this wetland.
  15. Other

**PRODUCTION EXPORT (Nutrient)** — This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.

**CONSIDERATIONS/QUALIFIERS**

1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland
3. Economically or commercially used products found in this wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic vegetative diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. “Flushing” of relatively large amounts of organic plant material occurs from this wetland.
12. Wetland contains flowering plants that are used by nectar-gathering insects.
13. Indications of export are present.
14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
15. Other

**SEDIMENT/Shoreline Stabilization** — This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.

**CONSIDERATIONS/QUALIFIERS**

1. Indications of erosion or siltation are present.
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. Potential sediment sources are present upstream.
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.
7. Wide wetland (>10') borders watercourse, lake, or pond.
8. High flow velocities in the wetland.
9. The watershed is of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake, or pond.
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
16. Other

**WILDLIFE HABITAT**— This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.<sup>1</sup>

**CONSIDERATIONS/QUALIFIERS**

1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.
3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, woodland, active farmland, or idle land) at least 500 feet in width.
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
7. Wildlife overland access to other wetlands is present.
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
10. Two or more islands or inclusions of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/shrub/vine/grasses/mosses)
16. Plant/animal indicator species are present. (List species for project)
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
19. Wetland contains or has potential to contain a high population of insects.
20. Wetland contains or has potential to contain large amphibian populations.
21. Wetland has a high avian utilization or its potential.
22. Indications of less disturbance-tolerant species are present.
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).
24. Other

<sup>1</sup>In March 1995, a rapid wildlife habitat assessment method was completed by a University of Massachusetts research team with funding and oversight provided by the New England Transportation Consortium. The method is called WETHings (wetland habitat indicators for non-game species). It produces a list of potential wetland-dependent mammal, reptile, and amphibian species that may be present in the wetland. The output is based on observable habitat characteristics documented on the field data form. This method may be used to generate the wildlife species list recommended as backup information to the wetland evaluation form and to augment the considerations. Use of this method should first be coordinated with the Corps project manager. A computer program is also available to expedite this process.

**RECREATION (Consumptive and Non-Consumptive)** — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish these resources of the wetland.

**CONSIDERATIONS/QUALIFIERS**

1. Wetland is part of a recreation area, park, forest, or refuge.
2. Fishing is available within or from the wetland.
3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake associated with the wetland is unpolluted.
7. High visual/aesthetic quality of this potential recreation site.
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.
10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.
13. Other

**EDUCATIONAL/SCIENTIFIC VALUE**— This value considers the suitability of the wetland as a site for an “outdoor classroom” or as a location for scientific study or research.

**CONSIDERATIONS/QUALIFIERS**

1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area.
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site is within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site is available.
12. Direct access to pond or lake at potential educational site is available.
13. No known safety hazards exist within the potential educational site.
14. Public access to the potential educational site is controlled.
15. Handicap accessibility is available.
16. Site is currently used for educational or scientific purposes.
17. Other

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**UNIQUENESS/HERITAGE** — This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

**CONSIDERATIONS/QUALIFIERS**

1. Upland surrounding wetland is primarily urban.
2. Upland surrounding wetland is developing rapidly.
3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams, occur in wetlands.
4. Three or more wetland classes are present.
5. Deep and/or shallow marsh or wooded swamp dominate.
6. High degree of interspersion of vegetation and/or open water occur in this wetland.
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake exists at potential educational site.
12. Two or more wetland classes are visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) are visible from primary viewing locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings are found within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland is within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
27. Wetland has local significance because it serves several functional values.
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is located in an area experiencing a high wetland loss rate.
32. Other

**VISUAL QUALITY/AESTHETICS**— This value considers the visual and aesthetic quality or usefulness of the wetland.

**CONSIDERATIONS/QUALIFIERS**

1. Multiple wetland classes are visible from primary viewing locations.
2. Emergent marsh and/or open water are visible from primary viewing locations.
3. A diversity of vegetative species is visible from primary viewing locations.
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
6. Visible surrounding land use form contrasts with wetland.

7. Wetland views absent of trash, debris, and signs of disturbance.
8. Wetland is considered to be a valuable wildlife habitat.
9. Wetland is easily accessed.
10. Low noise level at primary viewing locations.
11. Unpleasant odors absent at primary viewing locations.
12. Relatively unobstructed sight line exists through wetland.
13. Other

**ENDANGERED SPECIES HABITAT**— This value considers the suitability of the wetland to support threatened or endangered species.

**CONSIDERATIONS/QUALIFIERS**

1. Wetland contains or is known to contain threatened or endangered species.
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species