Wetland Functional Assessment

Of

Town of Durham, NH
Lee Traffic Circle Water Line Extension & UNH Water Main Improvements
Durham & Lee, NH

Prepared for

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1.0 Introduction

Pursuant to a request by Underwood Engineers, Inc. for a wetland permit from the State of New Hampshire-Wetlands Bureau for proposed water line improvements adjacent to and within jurisdictional wetlands at numerous locations along Routes 4 and 155A in Durham and Lee, NH, we herewith submit this Wetland Functional Assessment to supplement the application as required under the NH Code of Administrative Rules Env-Wt 100-900, specifically Env-Wt 306.05(a)(1) and Env-Wt 311.10.

Wetland functional assessments generally involve an inventory and survey of physical attributes, such as, but not limited to, topographic position, vegetative patterns and soils, which then allow practitioners to predict functions that arise from those attributes. This report provides an assessment of the existing wetland functions and values at the various locations according to the United States Army Corps of Engineers - New England District, Highway Methodology Workbook *Supplement* – September 1999 Edition (updated in 2015). This study does not attempt to evaluate the potential effects of global climate change and, where applicable, associated sea level rise or tidal surge, on the functions and values of wetlands at the various locations.

This assessment evaluates fourteen (14) functions and values for fifteen (15) wetland areas based upon current conditions. The functions and values of a wetland or adjacent wetlands may be altered, or more specifically, the effectiveness of a wetland or adjacent wetlands to provide a particular function may be altered (increased or decreased) as a result of modifications to adjacent uplands, impacts to wetlands elsewhere on site or other development in the watershed.

Attached is a copy of a composite 7.5 X 15 minute, United States Geological Survey topographic map (Barrington/Dover West quadrangles) upon which is depicted the approximate location of proposed water line improvements. Refer to Exhibit 1.

2.0 Existing Conditions

2.1 General Site Description

The project corridor involves two primary areas-of-interest (AOI), one in Lee and one in Durham, NH. The first AOI starts near Angell Road in Lee and extends west along the north side of NH Route 4, crossing to the south side of Route 4 near the Lee Traffic Circle, then crossing over NH Route 125 and continuing west along the south side of Route 4. The second AOI within the project corridor is located along Main Street (Route 155A) near Mast Road and Stadium Drive at the University of New Hampshire. Most proposed wetland impacts are situated along the various roadways involved; frequently within road fill or at the toe-of-road fill.

There are numerous other wetland areas within the original overall area-of-interest that were delineated. Similarly, there are numerous wetlands that are not included in the current project and are not depicted on the site plans. This study focuses on those wetlands which are proposed for direct impacts or potential

indirect impacts due to proximity of proposed water line construction. The study locations were chosen early in the design process based upon areas of anticipated impact. The project design has changed since the study areas were initially chosen, therefore some areas that were studied are no longer proposed for direct impact. Areas which are not proposed for direct wetland impact are identified on the attached Wetland Functional Assessment Worksheets as having 0 square feet (SF) of impact.

2.2 Wetland Delineation

Wetlands within the overall corridor were delineated by this office in February and April of 2018. Seasonal conditions at the time were conducive to delineation as snow cover was mostly absent. Solid pink color flags were placed in the field to identify the wetland-upland boundary. Each wetland area flag sequence was given a unique label. The wetland areas are labeled 1-2, A-Z and AA-ZZ. For example, flag series 1-1 to 1-4, flag series A1-A14 and flag series FF1-FF6.

As is to be expected when delineating wetlands adjacent to roads and highways, varying degrees of altered wetland conditions were frequently encountered. Where altered wetland conditions were encountered, protocols found in Section F of the Federal Wetland Manual were generally followed and best professional judgment was employed as necessary. In the absence of natural vegetation communities, delineations frequently relied on the presence or absence of hydric soil conditions as the rationale for placement of flags identifying the wetland-upland boundary in the field.

There are no prime wetlands on or immediately adjacent to the subject properties. Neither Durham nor Lee have municipally designated prime wetlands recognized by NHDES. Prime wetlands are those wetlands with higher functions and values and receive additional protection under state law.

2.3 General Project Description

The project proposes to extend approximately 8200 linear feet (LF) of new water line from an existing Town of Durham well field located off of Angell Road in Lee to service businesses and multi-family residential dwellings adjacent to the Lee Traffic Circle that are situated on properties which are contaminated with methyl tertiary butyl ether (MTBE), a fuel additive found in gasoline. (Refer to Exhibit 2.) Additionally, the project proposes approximately 1,200 LF of water line improvements in Durham along Main Street as well as improvements adjacent to Stadium Drive. For the purposes of this report it is assumed that, where proposed, direct impacts to wetlands resulting from the project will be restored in place.

2.4 Study Area Determination

Selection of appropriate study areas is crucial to the outcome of any functional wetland assessment. Determination of suitable study areas can be somewhat subjective depending upon the criteria used to define the study area, especially since wetlands are natural systems and do not recognize political boundaries such as property or town lines and because all wetland systems have variations in physical attributes within a seemingly discreet wetland area. Wetland systems are frequently comprised of numerous wetlands with differing classifications, each having differing physical attributes and therefore exhibiting differing functions and values. Altering the size of a study area can therefore influence the physical attributes which are assessed, affecting the interpretation or perception of functions and values and ultimately the results of an assessment.

Due to the linear nature of this project, and the fact that there are potentially many properties involved, the assessment study areas generally equate with proposed wetland impact areas. It was felt that expanding study areas to include more natural wetlands, those that are presumably less

altered due to their location being further from existing roads, was impractical and inappropriate and would artificially inflate the number of functions provided and/or the level at which those functions and values were deemed to be performed. Given that most wetland impacts are temporary (presumably subject to restoration upon completion of the work) and are proposed adjacent to existing roads, this did not seem appropriate, especially since the impacts are generally confined to the right-of-way.

Wetland Functional Assessment Worksheets were completed for each wetland area proposed for impact and are attached to this report and included herein by reference. In some cases wetland impact areas were combined and one worksheet was completed for more than one impact area. For example, Wetland Identification (ID) 4 involves two areas that are close together and part of the same wetland system with similar physical attributes. (These areas were originally proposed for 200 square feet (SF) and 1,050 SF of impact but the water line will now be installed with trenchless methods and therefore impacts are no longer proposed.)

2.5 Wetland Study Area Descriptions

The following section describes general physical attributes and conditions found in each wetland study area. Included with each description is a snippet of the site plan to provide a locus that identifies each wetland area identification number and corresponding worksheet. Refer to Figures 1-16. Figures 1-13 are generally oriented with south at the top while Figures 14-16 are generally oriented with north at the top. Litter and trash such as political campaign signs and beverage containers were commonly observed in most of the wetlands which were assessed. We have identified the flag series that distinguishes each wetland in the field below but it should be noted that, although we use thicker 'arctic' flagging, many of the flags have vanished since the delineation was completed in 2018. This is to be expected due to conditions that typically exist along highways. Several of the wetlands, especially Wetland ID 8, likely drain (eventually), to the Oyster River, although it is not apparent from remote sensing and it was beyond the scope of the assessment to track these connections on the ground. Wetland ID's 1-14 are located in Lee, NH while wetland ID's 14 and 15 are located in Durham, NH.

Wetland ID 1

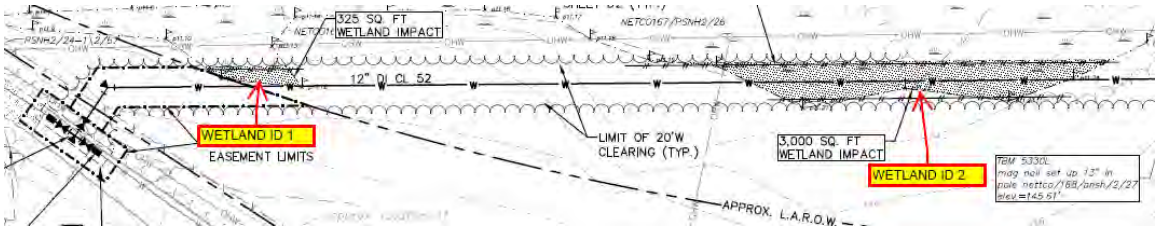
This wetland area is partially man-made by historic grading associated with a now abandoned section of Angell Road, which likely was the through road in this area before Route 4 was improved. The area is comprised of poorly drained hydric soils. Vegetation cover involves a young forest with a dense shrub understory, part of which was recently maintained, presumably to maintain the overhead powerlines. Dominant trees involve black cherry (*Prunus serotina*) and red maple (*Acer rubrum*). Dominant shrubs involve arrow-wood (*Viburnum dentatum*). Asian bittersweet (*Celastrus orbiculatus*), an invasive species, was also noted. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'P' series. Refer to image 1 and Figure 1 below.

Wetland ID 2

This wetland area is partially altered by shallow regrading and likely was used as a staging area during the construction of the old road as well as Route 4. The area has since revegetated with a shrub-sapling mix that is dominated by red-panicled dogwood (*Cornus racemosa*), speckled alder (*Alnus incana rugosa*) and glossy buckthorn (*Rhamnus frangula*). Glossy buckthorn is an invasive species. Saplings of American elm (*Ulmus Americana*) and red maple were common.

Sensitive fern (*Onoclea sensibilis*) was commonly observed in the herbaceous layer. The area is comprised of poorly drained hydric soils. Partially exposed soils suggest that the area may provide habitat for American woodcock (*Scolopax minor*). The wetland-upland boundary is identified in the field by pink color flags labeled as the 'P' series. Refer to image 2 and Figure 1 below.

FIGURE 1

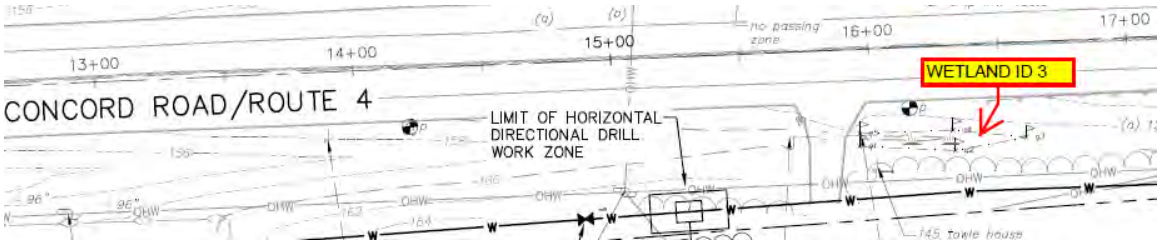


Wetland ID 3

NO PROPOSED IMPACT TO WETLAND - UE NOTE (4/17/20)

This wetland area is entirely man-made by excavation associated with Route 4 and may therefore be exempt from any state permitting requirements. A culvert located near the east end, beneath the driveway at 145 Concord Road, serves to slightly impound water for short periods at this location. The vegetative cover is herbaceous, comprised of common turf grasses, which appear to be regularly mowed. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'Q' series. Refer to image 3 and Figure 2 below.

FIGURE 2



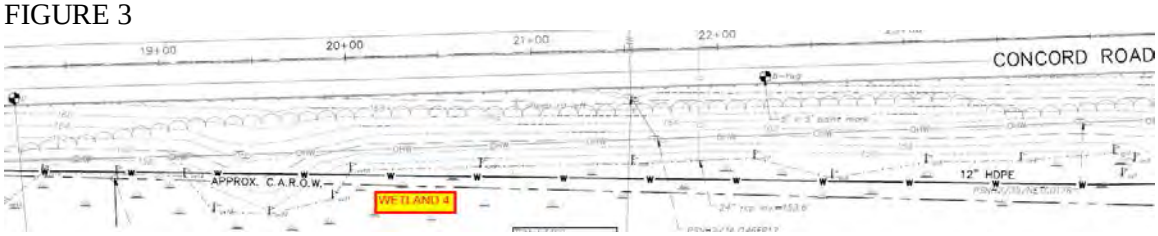
Wetland ID 4

NO PROPOSED IMPACT TO WETLAND - UE NOTE (4/17/20)

Wetland ID 4 is comprised of two areas that are part of the same wetland complex having similar physical attributes si the two areas were assessed as one. The southern wetland-upland boundary is generally the result of filling associated with the construction of Route 4 and is located at the base of a lengthy steep slope. Significant portions of the northern wetland-upland boundary, slightly outside the AOI for both delineation and this study, are generally the result of filling for driveway construction to provide access to a nearby single-family residence. There is a culvert beneath Route 4 that discharges intermittent flow into the wetland. The wetland drains through a culvert beneath the driveway. The wetland-upland boundary is identified in the field by pink color

flags labeled as the 'CC' series. The wetland is dominated by poorly drained soils. The forested wetland is dominated by red maple trees. Other species observed included winterberry (*Ilex verticillata*) and multi-flora rose (*Rosa multi-flora*) shrubs and tussock sedge (*Carex stricta*). Multi-flora rose is considered invasive. The area presents some attributes customarily associated with vernal pools. A brief survey for secondary vernal pool indicators was negative. Refer to image 4 and Figure 3 below.

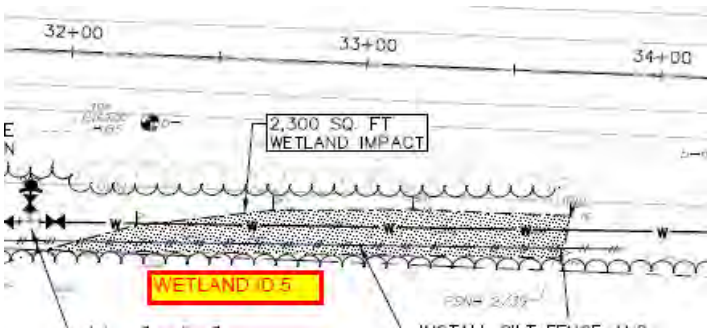
FIGURE 3



Wetland ID 5

This wetland is dominated by poorly drained soils and receives the majority of its hydrology from Route 4 in the form of sheet flow and stormwater runoff. The forested wetland is dominated by red maple trees and shrubs as well as glossy buckthorn, an invasive species. The vegetation community has been altered by highway construction as well as maintenance of powerlines. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'R' series. Refer to image 5 and Figure 4 below.

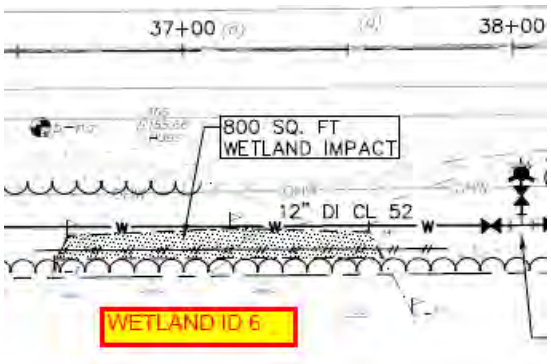
FIGURE 4



Wetland ID 6

This wetland is dominated by poorly drained soils and receives the majority of its hydrology from Route 4 in the form of sheet flow and stormwater runoff. The forested wetland is dominated by red maple trees and shrubs as well as glossy buckthorn, an invasive species. The vegetation community within the proposed impact area is scrub-shrub due to likely maintenance associated with nearby powerlines. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'S' series. Refer to image 6 and Figure 5 below.

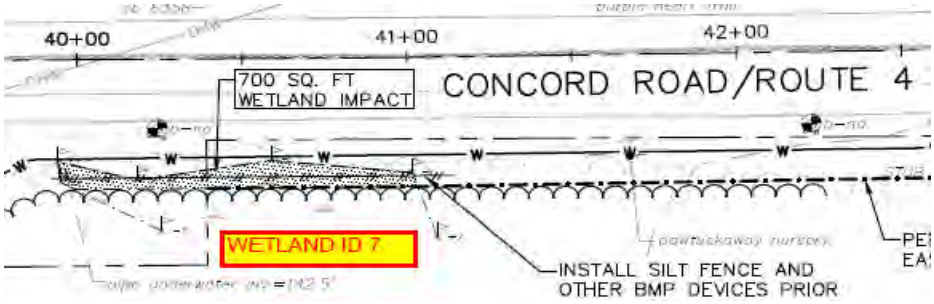
FIGURE 5



Wetland ID 7

This wetland is dominated by poorly drained soils and receives the majority of its hydrology from Route 4 in the form of sheet flow and stormwater runoff. The forested wetland is dominated by red maple trees and shrubs as well as glossy buckthorn, an invasive species. Sensitive fern was commonly observed in the herbaceous layer. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'T' series. Refer to image 7 and Figure 6 below.

FIGURE 6



Wetland ID 8

This wetland is dominated by poorly drained hydric soils and receives its hydrology from groundwater discharge as well as sheet flow and stormwater runoff from Route 4. The forested part of wetland is dominated by red maple trees and shrubs as well as glossy buckthorn, an invasive species. Other species commonly observed include poplar (*Populus tremula*) trees and white pine (*Pinus strobus*) shrubs. Parts of this wetland are constituted by a swale which was likely graded during the construction of Route 4. Sensitive fern was commonly observed in the herbaceous layer within the tree line while lurid sedge (*Carex lurida*) was commonly observed in the swale. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'EE' series. Refer to image 8 and Figures 7 and 8 below.

FIGURE 7

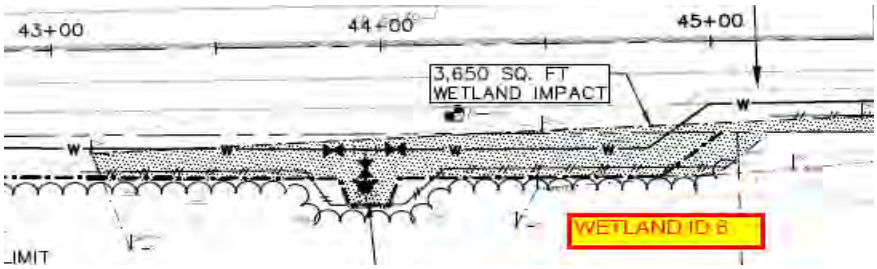
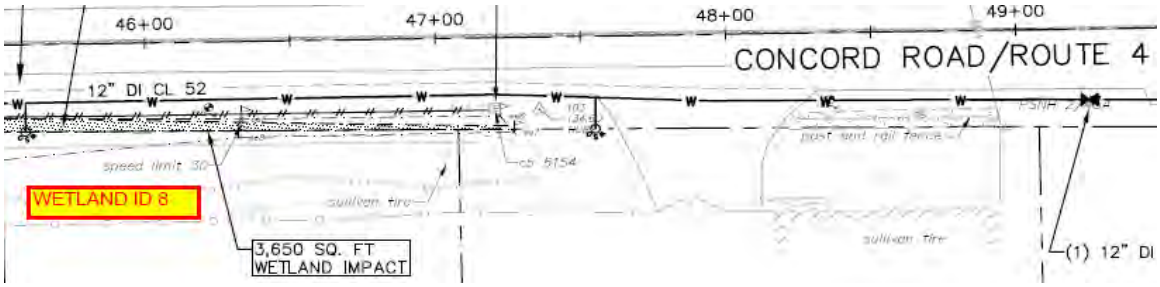


FIGURE 8



Wetland ID 9 **NO PROPOSED IMPACT TO WETLAND - UE NOTE (4/17/20)**

Wetland ID 9 is associated with The Oyster River. (The Oyster River is also identified as Dube Brook on some resource maps.) The Oyster River is a perennial brook and a designated river as per NH RSA 483. The wetlands in this area represent 100-year flood plain. (Refer to Exhibit 3.) The watershed is impaired by chlorides and other surface water impairments exist as well. These impairments include dissolved oxygen/dissolved oxygen saturation, and Escherichia coli (E. coli). (Refer to Exhibit 4.) Properties on the west side of the river are generally contaminated with MTBE. (Refer to Exhibit 2.) Correspondingly, there are numerous hazardous waste generators, remediation sites and underground storage tanks in this area, especially west of the river.

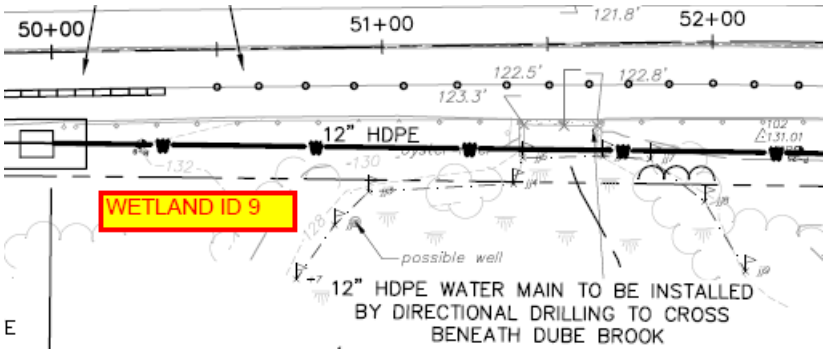
This wetland is dominated by very poorly drained hydric mineral and organic soils. (This is the only wetland study area with very poorly drained soils.) Peatlands, a priority resource area (PRA), are identified nearby and observations made during our site inspection suggest that these may extend closer to Route 4 and the existing crossing than indicated on Exhibit 4. The wetland is dominated by emergent plants which include broad-leaved cat-tail (*Typha latifolia*), tussock sedge and common three-square (*Schoenoplectus pungens*). Cat-tail is a native invasive species. Purple loosestrife (*Lythrum salicaria*), a non-native invasive species, was also observed at this location although the infestation appears to be nominal. Random patches of button bush (*Cephalanthus occidentalis*) and speckled alder shrubs exist further from Route 4.

The area is identified as a PRA supporting floodplain wetlands adjacent to a Tier 3 stream crossing. According to information obtained from various state resources, the Oyster River supports a NH Fish & Game (NHF&G) species of conservation concern. The Wildlife Action Plan identifies American Brook Lamprey (*Lethenteron appendix or Lampetra appendix*) and considers it to be critically imperiled in NH. The Oyster River watershed is the only watershed in NH known to support American Brook Lamprey. Other species which can be found in the Oyster River / Dube Brook watershed, depending upon location, include Banded Sunfish (*Enneacanthus*

obesus) and American Eel (*Anguilla rostrata*). A beaver dam approximately 100 feet in length was observed approximately 380 feet north / downstream of Route 4.

The wetland-upland boundary is identified in the field by pink color flags labeled as the 'JJ' series. Refer to image 9 and Figure 9 below.

FIGURE 9



Wetland ID 10

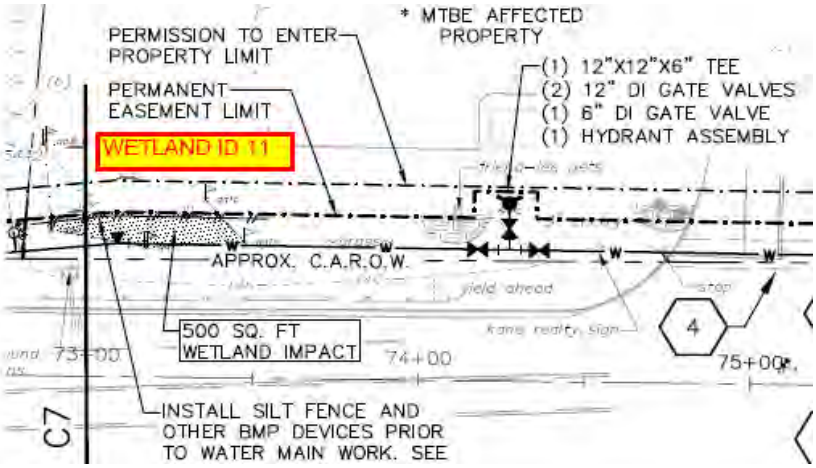
This isolated wetland is dominated by somewhat poorly and poorly drained hydric soils and discharges intermittently to Route 4. The wetland was likely once part of a much larger wetland, and was likely contiguous with wetlands associated with the Oyster River at one time, but approximately 450 SF is all that remains of the wetland due to encroachment and filling from the east, west and south. Nearly the entire wetland-upland boundary is therefore man-made. The forested wetland area is dominated by gray birch (*Betula populifolia*) and white pine saplings as well as winterberry shrubs. The wetland is situated on property contaminated by MTBE. Herbaceous species such as soft rush (*Juncus effusus*) exist closer to the road in an area that is otherwise dominated by grasses and weeds. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'K' series. Refer to image 10 and Figure 10 below.

FIGURE 10

Wetland ID 11

This wetland is dominated by poorly drained hydric soils and receives most of its hydrology from stormwater runoff originating from impervious surfaces such as Route 4 as well as asphalt parking at the McDonald's restaurant to the east and the Friend-Lee Pet to the west. The forested wetland is dominated by red maple and gray birch saplings as well as winterberry shrubs. Occasional white pine and oak trees were also observed. Small populations of Japanese knotweed (*Reynoutria japonica*) and purple loosestrife were observed, both of which are invasive species. This wetland eventually drains to the Oyster River, which is approximately 680 feet distant, to the south. The wetland is situated on property known to be contaminated by MTBE. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'QQ' series. Refer to image 11 and Figure 11 below.

FIGURE 11

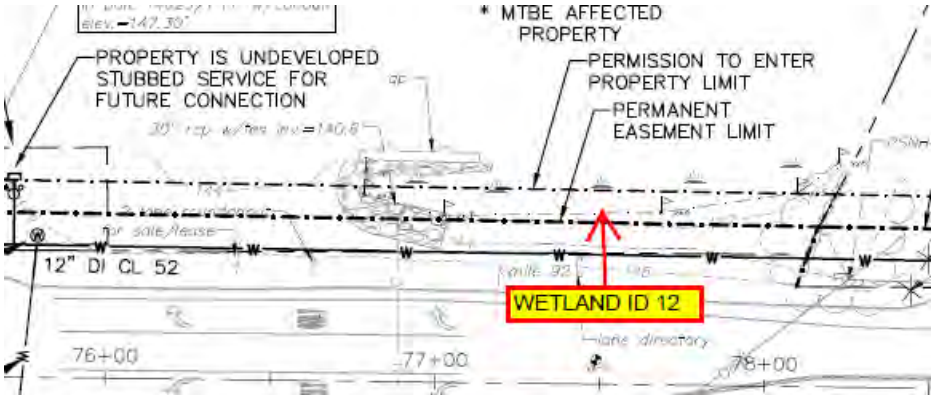


Wetland ID 12 **NO PROPOSED IMPACT TO WETLAND - UE NOTE (4/17/20)**

This wetland is dominated by poorly drained hydric soils and receives most of its hydrology from an intermittent but significant stream originating north of Route 4, the watershed of which is significantly undeveloped. On the south side of Route 4, the stream has been diverted and channelized, although portions of the stream channel have been restored to a more naturalized condition. The restored area notwithstanding, the tree canopy has been removed and the stream receives considerable sunlight before re-entering the woods to the south. Upon discharging the culvert beneath Route 4, the stream is encouraged to flow to the west, and along the toe-of-fill from Route 4, by gabions. Some hydrology may be provided by a gravel parking area and partially developed lot adjacent and west of the Friend-Lee pet.

The wetland is dominated by red maple saplings as well as winterberry, speckled alder, dogwood (*Cornus* sp.) and steeplebush (*Spiraea tomentosa*) shrubs. A small population of Japanese knotweed, an aggressive invasive species, was observed in the road fill and proposed work area. This stream eventually drains to the Oyster River, which is approximately 500 feet distant, to the south. The wetland and stream are situated on property known to be contaminated with MTBE. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'XX' series. Refer to image 12 and Figure 12 below.

FIGURE 12

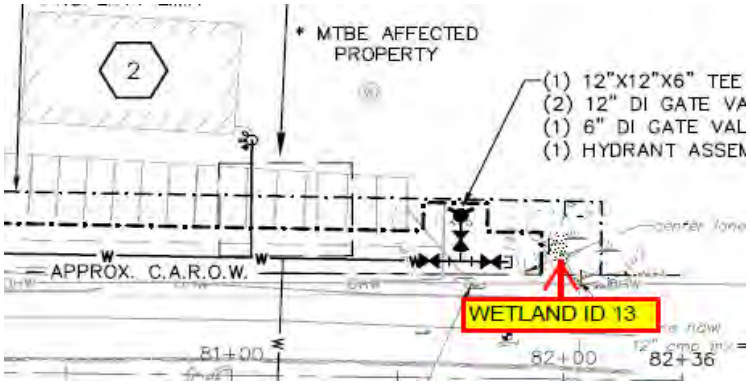


Wetland ID 13 **NO PROPOSED IMPACT TO WETLAND - UE NOTE (4/17/20)**

Wetland 13 is dominated by poorly drained hydric soils and receives its hydrology from stormwater runoff originating from a catch basin with a small watershed situated the north side of Route 4. The area is classified as a scrub-shrub wetland which is dominated by speckled alder and dogwood species. Occasional red maple and elm trees can be observed. Sensitive fern and a significant growth of reed canary grass (*Phalaris arundinacea*) were also observed as well as purple loosestrife. Reed canary grass and purple loosestrife are considered invasive. The Natural Resources Conservation Service holds a conservation easement on the property.

This wetland eventually drains, via sheet flow primarily, to the Oyster River, which is approximately 150 feet distant, to the south. The wetland is situated, at least in part, on property known to be contaminated with MTBE. The wetland-upland boundary is identified in the field by pink color flags labeled as the 'WW' series. Refer to image 13 and Figure 13 below.

FIGURE 13



Wetland ID 14 (Durham)

Wetland 14 is dominated by poorly drained hydric soils having marine sediment parent materials. The wetland is drained by College Brook though a 36 inch diameter culvert beneath Main Street and another culvert beneath Mast Road to the east. College Brook has been historically ditched and straightened in this area. College Brook is identified as having fisheries with species of

conservation concern by NH Fish & Game (Refer to Exhibit 5.) According to information obtained from various state resources, College Brook supports American eel. NH F&G also considers it to be a vulnerable (state rank) species. This wetland and College Brook eventually drain to the Oyster River, which is approximately 1.7 miles distant, after traveling through the university campus and downtown Durham.

College Brook is subject to flooding in the 100-year storm event. (Refer to Exhibit 3.) The wetland is comprised largely of abandoned agricultural fields that were converted many years ago and are densely vegetated with reed canary grass, an invasive species. Broad-leaved cat-tail is common to the area as well. The watershed is impaired by chlorides and other surface water impairments exist as well. These impairments include benthic macroinvertebrates, dissolved oxygen saturation, and E. coli. (Refer to Exhibits 2 and 5.)

The wetland-upland boundary is identified in the field by pink color flags labeled as the 'C' series. Refer to image 14 and Figures 14 and 15 below.

FIGURE 14

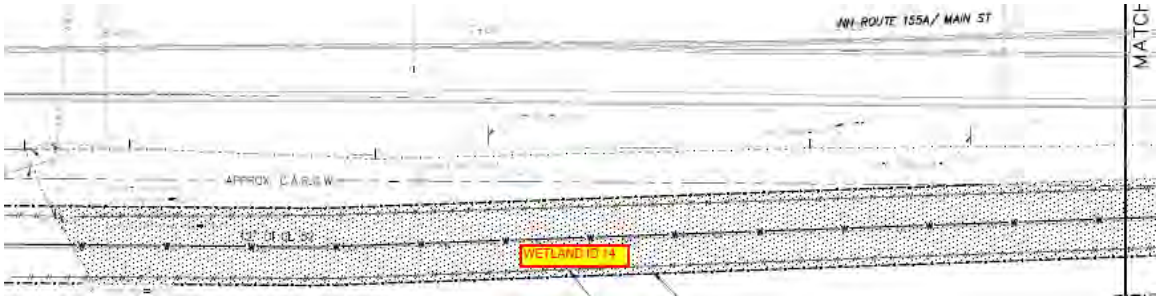
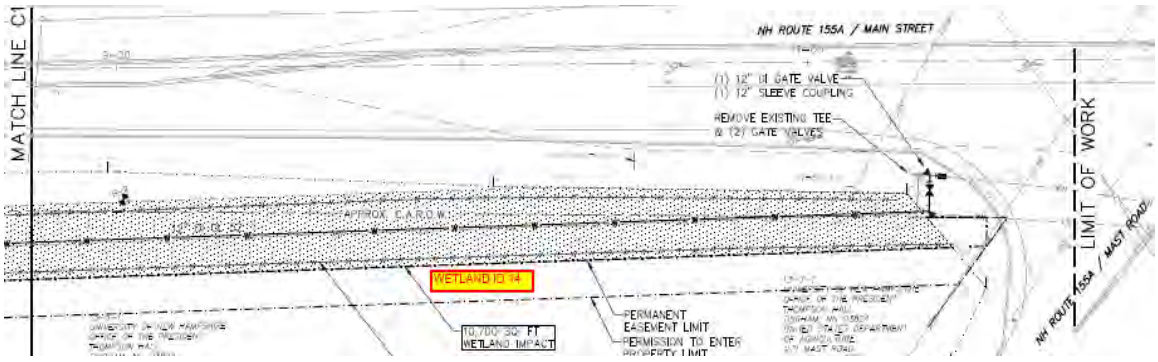


FIGURE 15



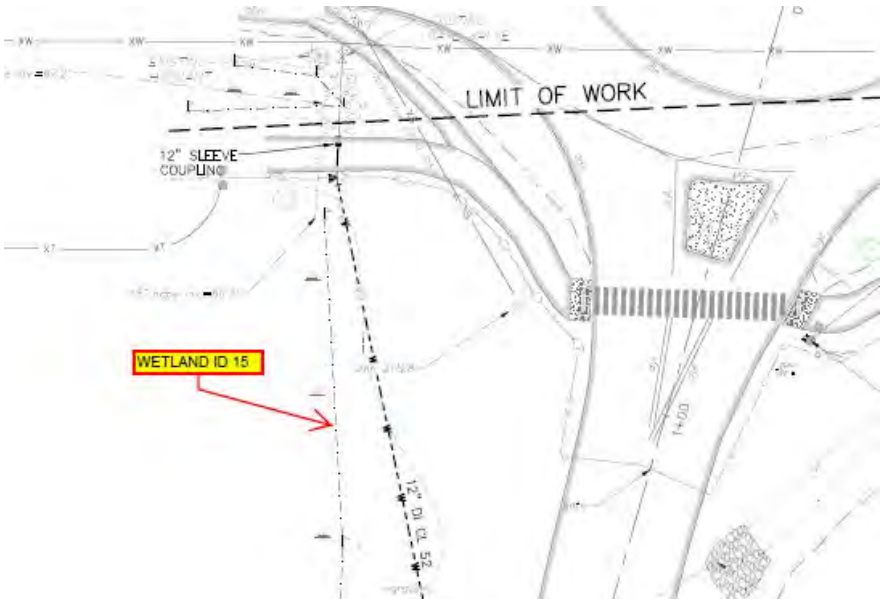
Wetland ID 15 (Durham) **PROPOSED WATER MAIN ALIGNMENT REVISED. NO PROPOSED IMPACT TO WETLAND.**

Wetland 15 is dominated by poorly drained hydric soils which have been regraded at one time. The wetland-upland boundary represents one edge of a man-made or man-enhanced swale that drains wetlands located on the north side of Main Street. The swale conveys intermittent stream flow. The entire area is vegetated with common turf grasses that receive regular mowing. Portions of the wetland appear to provide grass parking for tailgating activities before football games. (The opposite/west side of the wetland was not delineated.) The swale is generally located near other athletic fields and facilities. The watershed is impaired by chlorides and other surface water

impairments exist as well. This wetland eventually drains to College Brook, which is approximately 1,000 feet distant.

The wetland-upland boundary is identified in the field by pink color flags labeled as the 'I' series. Refer to image 15 and Figure 16 below.

FIGURE 16



3.0 Wetland Functions and Values

Wetland functions are self-sustaining properties and physical attributes of wetlands that exist without regard to subjective human values. Wetland values are benefits derived from these functions and physical attributes. The functions assessed by the US Army Corps of Engineers Highway Methodology are identified below with a brief explanation of what each function and value considers.

Note that the Highway Methodology does not consider Ecological Integrity. Ecological Integrity is a function identified in NH RSA 482-A: Fill and Dredge in Wetlands, specifically Section 482-A:2 XI. This functional wetland assessment utilizes the field criteria in the Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire, December 2015 to assess this function. NH Method data sheets for this function are attached.

3.1 Functions

1 - Ecological Integrity – The overall health and stability the wetland ecosystem.

3 - Fish & Aquatic Life Habitat – The potential for waterbodies associated with wetlands to provide suitable habitat for fish or shellfish.

4 - Flood Storage – The potential for a wetland to reduce flood damage by attenuating floodwaters through storage and desynchronization of peak flows.

5 - Groundwater Recharge – The potential for a wetland to recharge water to an aquifer or discharge groundwater to the surface.

7 - Nutrient Trapping/Retention & Transformation – The effectiveness of wetlands to protect water quality and prevent adverse effects associated with excess nutrients in a watershed.

8 - Production Export – The ability of the wetland to produce food for humans or other organisms.

10 - Sediment Trapping – The potential for the wetland to protect water quality by trapping sediments, toxicants and pathogens.

11 - Shoreline Anchoring – The ability of a wetland to stabilize stream banks or shorelines against erosion.

14 - Wetland-dependent Wildlife Habitat – The effectiveness of the wetland to provide suitable or important habitat for wetland wildlife.

3.2 Values

2 - Educational Potential – The value of the wetland as an outdoor classroom.

6 - Noteworthiness – The effectiveness of the wetland to support threatened or endangered species.

9 - Scenic Quality – The visual or aesthetic qualities of a wetland.

12 - Uniqueness/Heritage – The value relating to the effectiveness of the wetland to provide special values such as unique geologic features and vernal pools.

13 - Wetland-based Recreation – The ability of the wetland and any associated waterbodies to provide consumptive (e.g. hunting) and non-consumptive (e.g. hiking) recreational opportunities.

4.0 Assumptions

The assessment of wetland functions and values can be an inherently subjective process. The Highway Methodology strives to eliminate potential bias through implementation of a qualitative and descriptive approach to functional assessment by requiring the evaluator to review a list of considerations and qualifiers for each function or value. The list of considerations/qualifiers is attached to this report as Appendix A.

The highway methodology lacks definitions or guidelines for certain abstruse terms associated with the considerations and qualifiers discussed, therefore, unless stated otherwise in this document, the assessment has made the following assumptions and/or interpretations as identified below by function/value and consideration/qualifier. The considerations/qualifiers and associated assumptions are numbered to correspond to numbering identified in the Appendix A of the Highway Methodology Workbook Supplement.

Ecological Integrity Function

The highway methodology does not consider Ecological Integrity as a function and provides no considerations or qualifiers. A review of NH RSA 482-A:2, Section XI does not provide any guidance regarding attributes and qualifiers that should be utilized to ascertain ecological integrity. This functional wetland assessment therefore utilizes the field criteria in the Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire, December 2015, to assess this function.

Assumption

Ecological Integrity is interpreted to exist where wetlands proposed for alteration have not been subject to filling, excavation, regrading, artificial drainage or alteration of the vegetation community and generally where the NH Method worksheet for this function indicates a value of 5.0 or higher.

Groundwater Recharge Function

Consideration/Qualifiers 1 and 2

Public or private wells occur downstream of wetland. Potential exists for public or private wells downstream of the wetland.

Assumption

Downstream is interpreted to involve the entire watershed, even where it extends off-site. The Highway Method does not distinguish between dug and drilled wells although their source water is frequently different. This assumption also applies to consideration / Qualifier 6 – Sediment/Toxicant/Pathogen Retention Function.

Consideration/Qualifiers 3 and 11

Wetland is underlain by stratified drift. Groundwater quality of the stratified drift aquifer within or downstream of the wetland meets drinking water standards.

Assumption

Water quality is based on visual observation only. No samples were collected or tested.

Consideration/Qualifier 12

Quality of water associated with the wetland is high.

Assumption

Water quality is based on visual observation only. No samples were collected or tested. (Applies to Number 18 under Uniqueness/Heritage also.)

Flood Storage Function

Consideration/Qualifier 1

Area of this wetland is large relative to its watershed.

Assumption

For the purposes of this assessment, a wetland is considered to be large relative to its contributing watershed if it represents approximately 25 percent or more of the watershed area.

Consideration/Qualifier 11

Valuable properties, structures or resources are located in or near the floodplain downstream from this wetland.

Assumption

Downstream is interpreted to involve the entire watershed, even where it extends off-site. Therefore, it is assumed that valuable properties generally lie in or near the floodplain downstream from the wetland at some point in the watershed.

Fish & Aquatic Life Habitat Function

Consideration/Qualifier 3

Size of this wetland is able to support large fish/shellfish populations.

Assumption

Evidence of any fish/shellfish population was interpreted to constitute a large population.

Sediment Trapping Function

Consideration/Qualifier 5

Long duration water retention time is present in this wetland.

Assumption

Long duration water retention time is interpreted as any time period of sufficient duration that will result in settling of suspended solids constituted by sand and silt size soil particles; excluding clay size soil particles (for which settling times are often calculated in days or even weeks, not hours).

Consideration/Qualifier 8

The wetland is known to have existed for more than 50 years.

Assumption

Best professional judgment was used to estimate the relative age of wetlands. Multiple versions of county soil surveys, aerial photographs and/or topographic quadrangles were not consulted. Natural wetlands are generally assumed to be more than 50 years old.

Shoreline Anchoring Function

Consideration/Qualifier 4

Potential sediment sources are present upstream.

Assumption

Upstream is interpreted to terminate at the nearest property line, where applicable.

Wetland-dependent Wildlife Habitat Function

Consideration/Qualifier 2

Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.

Assumption

Water quality is based on visual observation only and is assumed to meet Class A or B standards where no obvious signs of excessive turbidity or other pollution were observed.

Consideration/Qualifier 14

Wetland exhibits a high degree of plant species diversity.

Assumption

A high degree of plant species diversity was generally assumed to be present where a preliminary inventory of plants at a representative observation location within the subject area revealed a significant number of species relative to other sites in the subject area.

Consideration/Qualifier 15

Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/shrub/vine/grasses/mosses)

Assumption

The presence of representatives of the tree, sapling, shrub, vine, herb/grass, & moss strata was interpreted to represent a high degree of diversity in plant community structure.

Wetland-based Recreation Value

Consideration/Qualifier 5

Wetland is a valuable wildlife habitat.

Assumption

All wetlands provide habitat of one degree or another. It is our interpretation that valuable wildlife habitat refers to wetland wildlife habitat and furthermore that valuable wetland wildlife habitat possesses the physical attributes such that it can reasonably be anticipated to provide habitat for important wildlife species; those species which owe all or a significant part of their life cycle to wetlands.

Consideration/Qualifier 7

High visual/aesthetic quality of this potential recreation site.

Assumption

The presence of three or more wetland classes was interpreted to represent high visual

and aesthetic quality. (This is consistent with Educational/Scientific Value consideration/qualifier #3, Uniqueness/Heritage Value consideration/qualifier #4 and Visual/Aesthetics Value consideration/qualifier #1.)

Educational Potential Value

Consideration/Qualifier 9

Potential educational site is within safe walking distance or short drive to schools.

Assumption

"Safe walking distance" is interpreted to be less than ¼ mile from an educational facility. (Distance is not the sole measure of a safe walk however. "Short drive" is interpreted to be less than 3 miles form an educational facility. (This interpretation also applies to Recreation above and Uniqueness/Heritage.)

Consideration/Qualifier 13

No known safety hazards exist within the potential educational site.

Assumption

"Safety hazards" exist everywhere and no activity is without risk. Safety hazards in the outdoors generally involve physical trip and fall hazards like roots, rocks and holes as well as environmental hazards such as poison ivy and bee stings; and both types are known to occur commonly on virtually every natural site. However, for the purpose of this assessment, known safety hazard is interpreted to involve unusual hazards that a reasonable person would not expect to commonly find in the forest such as explosives, shooting ranges or hazardous waste. (This assumption/interpretation also applies to #10 Uniqueness/Heritage.)

Uniqueness/Heritage Value

Consideration/Qualifier 19

Opportunities for wildlife observation are available.

Assumption

Most wildlife observations are chance encounters but it is assumed that "opportunities for wildlife observations" are available in one form or another at virtually any wetland or location if the observer is quiet, motionless and spends enough time. Wildlife sightings generally increase with distances from human activity as does the rarity of the species. (Most wildlife studies and their conclusions about anticipated use by wildlife are based upon an evaluation of a particular locations physical attributes and any signs of wildlife and generally not on observations of actual wildlife.)

Noteworthiness Value

Consideration/Qualifier 1/2

Wetland contains or is known to contain threatened or endangered species.

Assumption

The project has contacted the Natural Heritage Bureau (NHB) for information on rare, threatened or endangered species and a copy of NHB report is attached to this document.

5.0 SUMMARY AND DISCUSSION

The Highway Methodology identifies 13 primary functions and values which can potentially be ascribed to wetlands. The presence of these functions and values provide benefits for society and the environment. The State of New Hampshire requires the assessment of each wetland for ecological integrity as well.

An individual worksheet has been completed for each wetland study area in order to appropriately manage data collection efforts and provide consistency. It can difficult to precisely implement many of the considerations/qualifiers since most wetlands are part of larger contiguous wetland systems, only a portion of which may fall within the wetland study area. It is accepted however that conclusions about the effectiveness of a wetland study area to provide a particular function can change depending upon a host of factors which include the assessment area involved and the relative juxtaposition with other wetland resources. Conclusions regarding the functions and values associated with these wetland study areas are summarized below and in Table 1.

TABLE 1 TALLY OF PRINCIPAL FUNCTIONS / VALUES BY WETLAND ID

	WETLAND ID														
FUNCTION/VALUE	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ecological Integrity	N	N	N	N	N	N	N	N	**Y**	N	N	**Y**	N	N	N
Educational Potential	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	N	N
Fish & Aquatic Life Habitat	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	**Y**	N
Flood Storage	N	N	N	**Y**	N	N	N	N	**Y**	N	**Y**	**Y**	N	**Y**	N
Groundwater Recharge	**Y**	**Y**	N	N	N	N	N	N	**N**	N	N	N	N	N	N
Noteworthiness	N	N	N	N	N	N	N	N	**Y**	N	N	N	**Y**	N	N
Nutrient Trapping/Retention& Tran	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	N	**Y**
Production Export (Nutrient)	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	N	N
Scenic Quality	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	N	N
Sediment Trapping	N	N	N	**Y**	N	N	N	N	**Y**	N	N	**Y**	N	**Y**	N
Shoreline Anchoring	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	N	N
Uniqueness/Heritage	N	N	N	N	N	N	N	N	**Y**	N	**Y**	**Y**	**Y**	N	N
Wetland-based Recreation	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Wetland-dependent Wildlife Habitat	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	N	N
TOTAL	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**12**	**0**	**2**	**4**	**2**	**3**	**1**

Many of the wetlands found in proposed impact areas do not provide a significant number of functions or, where the wetland may possess suitable physical attributes that allow them to perform a particular function, they were often deemed not to perform that function at a high level due to their proximity to existing roads or other counterbalancing factors.

Wetland ID 9, which involves wetlands sustained by the Oyster River, clearly performs a significant number of functions at a high level. Wetland ID 12, while highly altered, was deemed to perform four functions at a high level. One of those functions was ecological integrity. We established a score of 5.0 or higher as the threshold for consideration as a principal function and Wetland ID 12 scored a 4.8 which we thought was close enough to the threshold to be rounded up. This is somewhat misleading, as is the total number of principal functions (4), especially since the area has been heavily altered. The other notable area is Wetland ID 14, which involves wetlands sustained by College Brook. This area provides fisheries and flood storage functions. Coincidentally, this wetland is proposed for a large area of temporary impact. The fisheries information for Wetland ID 14 is provided for the entire watershed. Since the Wetland ID 14 study area is located in the headwaters, more investigations would be needed to confirm the presence of this species in this part of College Brook.

The conclusions above are not to suggest that the various wetland study areas do not perform or provide any function or value or that they cannot provide or perform any function that is not identified as a principal function; however the data and our observations and subsequent conclusions confirm that the wetlands do not perform or provide those functions at an elevated or significant level. For those interpreting this report, caution needs to be applied when deriving conclusions about impact assessment when using the findings within. Additionally, do not be easily tempted to rank or compare the wetlands described within this report against one another and certainly against other off-site wetlands. Ranking wetlands numerically or rating wetlands low, medium or high is tempting but is inappropriate and implies a level of accuracy or understanding of the wetlands and functional assessment methodologies which may not exist.

WETLAND FUNCTIONAL ASSESSMENT

PHOTOGRAPHS & DESCRIPTIONS

Image 1 – Wetland ID 1 looking east toward Angell Rd. Note recently cut vegetation. *(©Jacobs2020)*

Image 2 – Wetland ID 2 looking southwesterly. Note the overhead power lines and Route 4 in the background. *(©Jacobs2020)*

Image 3 – Looking west at Wetland ID 3. Note Route 4 on left in background. *(©Jacobs2020)*

Image 4 – Wetland ID 4 looking east. Note steep embankment, driveway & Route 4 on right in background. *(©Jacobs2020)*

Image 5 – Wetland ID 5 looking east. Note Route 4 on right and utility pole 2/39 on left. *(©Jacobs2020)*

Image 6 – Wetland ID 6 looking west. Note Route 4 on right and utility pole 2/40 on right. *(©Jacobs2020)*

Image 7 – Wetland ID 7 looking northwest from Route 4. Note Route telephone box and property bound on right. *(©Jacobs2020)*

Image 8 – Wetland ID 8 looking west. Note Route 4 and driveway to Sullivan Tire on left in background. *(©Jacobs2020)*

Image 9 – Wetland ID 9 looking west/downstream. Note abutment in foreground and Oyster River. *(©Jacobs2020)*

Image 10 – Wetland ID 10 looking southwest from Route 4. Note Irving gas station on right in background. *(©Jacobs2020)*

Image 11 – Wetland ID 11 looking west from McDonalds. Route 4 on right. *(©Jacobs2020)*

Image 12 – Wetland ID 12 looking west. Route 4 on right. Sterling Realty apartments on left in background. *(©Jacobs2020)*

Image 13 – Wetland ID 13 looking south from Route 4. Note pavement in foreground. Sterling Realty apartments on left just out-of-view. *(©Jacobs2020)*

Image 14 – Wetland ID 14 looking east from Route 155 toward Mast Road in background. Note sewer man-hole in center / foreground. College Brook on right. *(©Jacobs2020)*

Image 15 – Wetland ID 15 looking north from Stadium Drive. Traffic circle on right in background.
(©Jacobs2020)

WETLAND FUNCTIONAL ASSESSMENT

WORKSHEETS / DATA FORMS

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: electric utility, transportation/Route 4 & Angell Rd., Forest land	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 50' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 1 (wet flag series 'P', especially P11)	LOCATION: (LAT/ LONG) 43 09'03.42" N/70 58' 53.55" W
WETLAND AREA: unknown- wetland continues outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: scrub-shrub
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PSS
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? headwater	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary/utility	PROPOSED WETLAND IMPACT AREA: 350 SF (01292020)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	part of ditch for old Route 4
2	☐ Yes ☒ No	8	☐ Yes ☒ No	man-made, vegetation recently maintained for utility line
3	☐ Yes ☒ No	14	☐ Yes ☒ No	ditch may have intercepted seasonal groundwater
4	☐ Yes ☒ No	6	☐ Yes ☒ No	wetland relatively flat-ditch slopes
5	☒ Yes ☐ No	7,8,13	☒ Yes ☐ No	ditch appears to intercept groundwater
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629
7	☒ Yes ☐ No	3	☐ Yes ☒ No	residential property upslope on opposite side of Angell Road
8	☒ Yes ☐ No	1,7	☐ Yes ☒ No	grape vine, berry bushes
9	☐ Yes ☒ No	4,9	☐ Yes ☒ No	some red maple trees, sandwiched between two roads
10	☒ Yes ☐ No	3,4	☐ Yes ☒ No	road sand
11	☐ Yes ☒ No	2,3	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	9	☐ Yes ☒ No	invasive species, bittersweet, buckthorn, olive
13	☐ Yes ☒ No	10,12	☐ Yes ☒ No	not a destination
14	☐ Yes ☒ No	13	☐ Yes ☒ No	not important habitat

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1	NA	NA	NA	NA	NA
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: intermittent road ditch	STREAM TYPE (ROSGEN): NA
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☒ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE: NA	

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 1 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?		a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?	historic excavation nearby assoc w/old Route 4	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 (5) 1
3. What percentage of the wetland has been altered by agricultural activities?		a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	recent cutting for power-line maintenance	a. Less than 1% b. From 1 to 10 % c. More than 10 %	10 5 (1)
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 (5) 1
6. What percentage of the wetland is occupied by invasive plant species?	Asian bitterseet, glossy buckthorn, olive	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 (5) 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Angell Road to the north and Route 4 to the south, old Route 4 nearby	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?		a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 5 (1)

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 4.3

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4), Forest	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 60' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 2 (wet flag series 'P', especially P11)	LOCATION: (LAT/ LONG) 43 09'03.02" N/70 58'56.28" W
WETLAND AREA: unknown- wetland continues outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: scrub-shrub
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1	COWARDIN CLASS: PSS
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? headwater	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary/utility	PROPOSED WETLAND IMPACT AREA: 3000SF (01292020)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	previously cleared for Old Route 4 and electric utility
2	☐ Yes ☒ No	8, 10	☐ Yes ☒ No	close to highway, NHB20-0629
3	☐ Yes ☒ No	1,8	☐ Yes ☒ No	intermittent stream is old man-made roadside ditch
4	☐ Yes ☒ No	2,9	☐ Yes ☒ No	watercourse is intermittent stream in roadside ditch
5	☒ Yes ☐ No	7,13	☒ Yes ☐ No	seasonal seeps due to slowly permeable soils
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629
7	☐ Yes ☒ No	7,8,9	☐ Yes ☒ No	no opportunity
8	☒ Yes ☐ No	1,8	☐ Yes ☒ No	limited berry bushes
9	☐ Yes ☒ No	9	☐ Yes ☒ No	highway noise
10	☐ Yes ☒ No	4,7	☐ Yes ☒ No	no sediment source
11	☐ Yes ☒ No	2	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	9	☐ Yes ☒ No	one of 32 qualifiers, NHB2-0629
13	☐ Yes ☒ No	10	☐ Yes ☒ No	not a destination
14	☒ Yes ☐ No	6,13	☐ Yes ☒ No	some potential for woodcock

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1	NA	NA	NA	NA	NA
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: intermittent road ditch	STREAM TYPE (ROSGEN): NA
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☒ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE: NA	

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 2 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?		a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?	historic excavation upslope assoc w/old Route 4	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 (5) 1
3. What percentage of the wetland has been altered by agricultural activities?		a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	historic cutting for likely more than 10 years ago	a. Less than 1% b. From 1 to 10 % c. More than 10 %	10 (5) 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	dense glossy buckthorn	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 5 (1)
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Angell Road to the north and Route 4 to the south, old Route 4 nearby	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?		a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 5 (1)

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 3.9

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4), Single-family residential	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 60' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 3 (Wet flag series 'Q')	LOCATION: (LAT/ LONG) 43 09'01.19" N/70 59' 08.95" W
WETLAND AREA: 350 SF +/-	DOMINANT WETLAND SYSTEMS PRESENT: mowed turf
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PEM
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☒ Yes ☐ No if not, where does the wetland lie in the drainage basin?	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☒ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: none	PROPOSED WETLAND IMPACT AREA: 0 SF (01292020)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	road ditch along Route 4
2	☐ Yes ☒ No	NA	☐ Yes ☒ No	not appropriate or likely, NHB20-0629
3	☐ Yes ☒ No	NA	☐ Yes ☒ No	storm flows only
4	☒ Yes ☐ No	2,3,4,5,6,8,9	☐ Yes ☒ No	limited effectiveness due to small size
5	☐ Yes ☒ No	NA	☐ Yes ☒ No	located at top of the hill
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629 - turtles nearby by unlikely at this location
7	☒ Yes ☐ No	3,4	☐ Yes ☒ No	limited opportunity
8	☐ Yes ☒ No	7	☐ Yes ☒ No	one strata represented
9	☐ Yes ☒ No	9	☐ Yes ☒ No	highway noise
10	☐ Yes ☒ No	2,4	☐ Yes ☒ No	no sediment source
11	☐ Yes ☒ No	15	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	17	☐ Yes ☒ No	one of 32 qualifiers, NHB20-0629
13	☐ Yes ☒ No	11	☐ Yes ☒ No	not a destination
14	☐ Yes ☒ No	NA	☐ Yes ☒ No	no potential

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1	NA	NA	NA	NA	NA
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: intermittent road ditch	STREAM TYPE (ROSGEN): NA
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☒ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE: NA	

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

- ☒ Wildlife and vegetation diversity/abundance list.
- ☒ Photograph of wetland attached.
- ☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.
- ☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 3 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	lawn fertilizer? animal manure? chlorinated swimming pool discharge?	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 5 (1)
2. Is there evidence of fill in the wetland?	man-made, Route 4 ditch	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 5 (1)
3. What percentage of the wetland has been altered by agricultural activities?	regular mowing	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	10 5 (1)
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	Not w/in last 10 years	a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	turf grasses?	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 5 (1)
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Adjacent to Route 4	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 5 (1)
10. Is there a human-made structure that regulates the flow of water through the wetland?		a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 2.7

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4), low-density single-family residential	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 38'-50' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 4 (Two areas-one system-Wet flag series 'CC'	LOCATION: (LAT/ LONG) 43 08'59.68" N/70 59' 23.04" W
WETLAND AREA: unknown - area extends outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: Forested
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1 (intermittent culvert discharge)	COWARDIN CLASS: PFO
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? headwater	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE: none	PROPOSED WETLAND IMPACT AREA: 0 SF (01292020)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	50% +/- of boundary man-made by filling
2	☒ Yes ☐ No	1	☐ Yes ☒ No	one wetland class present, NHB20-0629 - possible turtles on Old Mill Road
3	☐ Yes ☒ No	NA	☐ Yes ☒ No	short term seasonal flooding
4	☒ Yes ☐ No	4,5,6,7,15	☒ Yes ☐ No	15 - constricted by driveway culvert
5	☐ Yes ☒ No	1	☐ Yes ☒ No	1 - drilled well for SF residence
6	☒ Yes ☐ No	1	☐ Yes ☒ No	poss. though unlikely vernal pool - no secondary ind. obs. - NHB20-0629 - poss. turtles
7	☒ Yes ☐ No	3,4,5,7	☐ Yes ☒ No	4 - residential lawn fertilizer? - unlikely based upon observations of yard
8	☐ Yes ☒ No	1,4	☐ Yes ☒ No	4 - observed avian use and deer tracks of highway slope
9	☐ Yes ☒ No	4	☐ Yes ☒ No	4 - red maple trees
10	☒ Yes ☐ No	3,4,6	☒ Yes ☐ No	obsecure sediment plume observed at Rt 4 culvert outlet
11	☐ Yes ☒ No	2,14	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	15	☐ Yes ☒ No	15 - red maple trees, NHB20-0629 - possible turtles
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	not a 'destination'
14	☒ Yes ☐ No	7,11,17	☐ Yes ☒ No	17 - deer tracks, avian use

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1	02/25/20	none	none	estimate 1-2 months	outside the window for primary indicators
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: intermittent culvert discharge	STREAM TYPE (ROSGEN): NA
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☒ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: no actual stream per se

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 4 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	chlorides from Route 4, residential septic systems and lawns, pet wastes	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 5 (1)
2. Is there evidence of fill in the wetland?	Driveway fill, Route 4 fill	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 5 (1)
3. What percentage of the wetland has been altered by agricultural activities?	no nearby agriculture	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	brush cutting along Route 4	a. Less than 1% b. From 1 to 10 % c. More than 10 %	10 (5) 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	significant litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	multi-flora rose	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 (5) 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	study area a combination of 2 wetlands-part of same system-located at the toe-of-fill from Route 4	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 5 (1)
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?	culvert beneath Route 4	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 5 (1)

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 3.1

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) to the south, primarily forested to the north	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 30' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 5 (wet flag series 'R')	LOCATION: (LAT/ LONG) 43 08'57.69" N/70 59' 36.22" W
WETLAND AREA: unknown - area extends outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: Forested
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PFO
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? headwater	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 2,300 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	adjacent to Route 4
2	☐ Yes ☒ No	1	☐ Yes ☒ No	one wetland class present, NHB20-0629 - poss. turtles Old Mill Road
3	☐ Yes ☒ No	1	☐ Yes ☒ No	no associated watercourse
4	☒ Yes ☐ No	2, 4,5,7	☐ Yes ☒ No	slope limits opportunity
5	☐ Yes ☒ No	2	☐ Yes ☒ No	hydrology provided primarily by highway runoff
6	☐ Yes ☒ No	1	☐ Yes ☒ No	NHB20-0629 - poss turtles on Old Mill Road
7	☐ Yes ☒ No	7	☐ Yes ☒ No	no associated watercourse
8	☐ Yes ☒ No	7	☐ Yes ☒ No	minimal food / nutrient sources
9	☐ Yes ☒ No	9	☐ Yes ☒ No	access from highway - not safe
10	☒ Yes ☐ No	4,7	☐ Yes ☒ No	no associated watercourse
11	☐ Yes ☒ No	3	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	10,17	☐ Yes ☒ No	10 - highway a safety hazard, NHB20-0629 - poss. turtles Old Mill Road
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	not a 'destination'
14	☐ Yes ☒ No	5	☐ Yes ☒ No	5 - north side

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: i	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 5 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	mostly chloride impaired runoff from Route 4	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?		a. Less than 1 % b. From 1-3 % c. More than 3 %	(10) 5 1
3. What percentage of the wetland has been altered by agricultural activities?		a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?		a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter from Route 4	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	glossy buckthorn	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 5 (1)
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?		a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 5 (1)
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?	catch basin down slope may be capturing some hydrology	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 4.9

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) to the south, primarily forested to the north	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 30' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 6 (wet flag series 'S')	LOCATION: (LAT/ LONG) 43 08'56.97" N/70 59' 41.89" W
WETLAND AREA: unknown - area extends outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: Forested
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PFO (impact area actually PSS due to cutting for OHL)
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? headwater	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 800 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	adjacent to Route 4
2	☐ Yes ☒ No	13	☐ Yes ☒ No	one wetland class present
3	☐ Yes ☒ No	1	☐ Yes ☒ No	no associated watercourse
4	☐ Yes ☒ No	2, 5,9	☐ Yes ☒ No	slope limits opportunity
5	☐ Yes ☒ No	2	☐ Yes ☒ No	hydrology provided primarily by highway runoff
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629
7	☐ Yes ☒ No	3,7,9	☐ Yes ☒ No	no associated watercourse
8	☐ Yes ☒ No	7	☐ Yes ☒ No	minimal food / nutrient sources
9	☐ Yes ☒ No	9	☐ Yes ☒ No	access from highway - not safe
10	☒ Yes ☐ No	1,4	☐ Yes ☒ No	no associated watercourse
11	☐ Yes ☒ No	3	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	10	☐ Yes ☒ No	10 - highway a safety hazard, NHB20-0629
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	not a 'destination'
14	☒ Yes ☐ No	5,7,11,13	☐ Yes ☒ No	5 - north side, adjacent to highway

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: i	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 6 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	Chloride impaired runoff from Route 4	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?	minimal incidental fill from construction of Route 4	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 (5) 1
3. What percentage of the wetland has been altered by agricultural activities?		a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	possible maintenance cutting underneath powerline w/in 10 years	a. Less than 1% b. From 1 to 10 % c. More than 10 %	10 5 (1)
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter common	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	honey suckle	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 (5) 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?		a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?		a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 4.3

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) to the south, primarily forested to the north	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 12' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 7 (wet flag series 'T')	LOCATION: (LAT/ LONG) 43 08'56.47" N/70 59' 46.54" W
WETLAND AREA: unknown - area extends outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: Forested
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PFO
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? mid-watershed	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 700 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	adjacent to Route 4
2	☐ Yes ☒ No	13	☐ Yes ☒ No	one wetland class present
3	☐ Yes ☒ No	3	☐ Yes ☒ No	no associated watercourse
4	☐ Yes ☒ No	5,9	☐ Yes ☒ No	slope limits opportunity
5	☐ Yes ☒ No	2	☐ Yes ☒ No	hydrology provided primarily by highway runoff
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629
7	☒ Yes ☐ No	1,7,8,9	☐ Yes ☒ No	no associated watercourse
8	☐ Yes ☒ No	7	☐ Yes ☒ No	minimal food / nutrient sources
9	☐ Yes ☒ No	4	☐ Yes ☒ No	4 - red maple trees dominant
10	☒ Yes ☐ No	1,4,7	☐ Yes ☒ No	storm flows, no associated watercourse
11	☐ Yes ☒ No	2,3	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	10,15	☐ Yes ☒ No	10 - highway a safety hazard, NHB20-0629
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	adjacent to Route 4, not a 'destination'
14	☒ Yes ☐ No	5,7,13	☐ Yes ☒ No	5 - north side, adjacent to highway

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: i	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 7 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	Chloride impaired runoff from Route 4	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?	incidental associated with Route 4 construction and culvert installation	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 (5) 1
3. What percentage of the wetland has been altered by agricultural activities?		a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?		a. Less than 1% b. From 1 to 10 % c. More than 10 %	10 (5) 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	glossy buckthorn	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 5 (1)
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?		a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?	culvert	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 5 (1)

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 3.9

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) to the south, forested to the north, Sullivan Tire /Ind. to the northwest	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 6'-12' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 8 (wet flag series 'EE')	LOCATION: (LAT/ LONG) 43 08'55.98" N/70 59' 52.16" W
WETLAND AREA: unknown - area extends outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: Forested
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PFO
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? possible extreme upper floodplain	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 3,650 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	adjacent to Route 4, lots glossy buckthorn
2	☐ Yes ☒ No	13	☐ Yes ☒ No	one wetland class present
3	☐ Yes ☒ No	1	☐ Yes ☒ No	no associated watercourse
4	☒ Yes ☐ No	5,6,7,9,11	☐ Yes ☒ No	extreme upper edge of flood plain
5	☒ Yes ☐ No	2, 13	☐ Yes ☒ No	13 - seeps observed
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629
7	☒ Yes ☐ No	3,7,8,9	☐ Yes ☒ No	no associated watercourse
8	☐ Yes ☒ No	7	☐ Yes ☒ No	no flushing
9	☐ Yes ☒ No	9	☐ Yes ☒ No	9 - access from Rt 4 - safety?
10	☒ Yes ☐ No	1,4,7	☐ Yes ☒ No	storm flows, no associated watercourse
11	☐ Yes ☒ No	2,3	☐ Yes ☒ No	no opportunity
12	☐ Yes ☒ No	10,15	☐ Yes ☒ No	10 - highway a safety hazard, NHB20-0629
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	adjacent to Route 4, not a 'destination'
14	☒ Yes ☐ No	5,7,13	☐ Yes ☒ No	5 - north side, adjacent to highway

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: i	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

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	☐ Yes ☒ No		☐ Yes ☒ No	
2	☐ Yes ☒ No		☐ Yes ☒ No	
3	☐ Yes ☒ No		☐ Yes ☒ No	
4	☐ Yes ☒ No		☐ Yes ☒ No	
5	☐ Yes ☒ No		☐ Yes ☒ No	
6	☐ Yes ☒ No		☐ Yes ☒ No	
7	☐ Yes ☒ No		☐ Yes ☒ No	
8	☐ Yes ☒ No		☐ Yes ☒ No	
9	☐ Yes ☒ No		☐ Yes ☒ No	
10	☐ Yes ☒ No		☐ Yes ☒ No	
11	☐ Yes ☒ No		☐ Yes ☒ No	
12	☐ Yes ☒ No		☐ Yes ☒ No	
13	☐ Yes ☒ No		☐ Yes ☒ No	
14	☐ Yes ☒ No		☐ Yes ☒ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

Wetland Name/Code: 8 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	Chloride impaired runoff, Industrial vehicle maintenance	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?	incidental from Route 4 construction	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 (5) 1
3. What percentage of the wetland has been altered by agricultural activities?		a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?		a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	glossy buckthorn, white pine due to edge effect?	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 5 (1)
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?		a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 5 (1)
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?		a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 4.4

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) south, floodplain north/south, industrial east, commercial west	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 0'-10' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/25/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 9 (wet flag series 'JJ')	LOCATION: (LAT/ LONG) 43 08'54.94" N/71 00' 01.66" W
WETLAND AREA: unknown - area extends outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: emergent
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? Many	COWARDIN CLASS: PEM/SS (Oyster River = R5UBH)
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? bottomland floodplain	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☒ Yes ☐ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 0 SF (012920)

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	☒ Yes ☐ No	Ecological Integrity from NH Method	☒ Yes ☐ No	integrity higher away from highway
2	☒ Yes ☐ No	1,2,3,4,5,8,9,11,13	☒ Yes ☒ No	parking authorized?, NHB20-0629 - poss. Lamprey & Eel
3	☒ Yes ☐ No	1,4,5,7,14	☒ Yes ☐ No	species of conservation concern
4	☒ Yes ☐ No	5,6,7,8,9,10,11,13,14,15,16,17,18	☒ Yes ☐ No	beaver dam observed behind Sullivan Tire
5	☐ Yes ☒ No	12	☐ Yes ☒ No	wetlands w/in AOI sustained by stream flow and overbank flooding
6	☒ Yes ☐ No	1	☒ Yes ☐ No	NHB20-0629 - assumed Lamprey & Eel
7	☒ Yes ☐ No	3,5,6,7,8,9,10	☒ Yes ☐ No	Dube Brook / Oyster River, vpd mineral and organic soils
8	☒ Yes ☐ No	1,2,6,7,10,11,12	☒ Yes ☐ No	12 - purple loosestrife
9	☒ Yes ☐ No	2,6,8,9	☒ Yes ☐ No	contrast from adjacent development
10	☒ Yes ☐ No	1,2,3,4,6,7,8,10,11,16	☒ Yes ☐ No	Dube Brook / Oyster River, MTBE contaminated properties nearby, perennial flow
11	☒ Yes ☐ No	1,4,6,7,9,12,13,15	☒ Yes ☐ No	not classic opportunity
12	☒ Yes ☐ No	5,7,10,12,13,16,17,18,19,22,27,30	☒ Yes ☐ No	30 - Oyster River is designated, NHB20-0629 poss Lamprey & Eel
13	☒ Yes ☐ No	2,5,6,7	☐ Yes ☒ No	adjacent to Route 4, not a 'destination'
14	☒ Yes ☐ No	1,2,5,6,7,8,11,13,19,21	☒ Yes ☐ No	shallow marsh, beaver dam

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: sandy bottom perennial	STREAM TYPE (ROSGEN): E
HAVE FISHERIES BEEN DOCUMENTED? ☒ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: see functions of associated wetlands previous page

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	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 9 Evaluation Date: 02/25/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	Chloride and MTBE runoff Several Haz waste generators, remediation sites and UST's	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 5 (1)
2. Is there evidence of fill in the wetland?	Route 4 bridge crossing	a. Less than 1 % b. From 1-3 % c. More than 3 %	(10) 5 1
3. What percentage of the wetland has been altered by agricultural activities?		a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?		a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	less litter than other nearby wetlands	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 (5) 1
6. What percentage of the wetland is occupied by invasive plant species?	some purple loosestrife and borad-leaved cat-tails	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 (5) 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Route 4 bisects wetland at the study location	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?	recent and ongoing development at or slightly outside 500'	a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	(10) 5 1
10. Is there a human-made structure that regulates the flow of water through the wetland?	Route 4 bridge crossing	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 6.2

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) north, commercial south	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 2' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/26/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 10 (wet flag series 'KK')	LOCATION: (LAT/ LONG) 43 08'55.62" N/71 00' 07.77" W
WETLAND AREA: 450 SF +/-	DOMINANT WETLAND SYSTEMS PRESENT: Scrub-shrub
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PSS
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☒ Yes ☐ No if not, where does the wetland lie in the drainage basin? NA	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☒ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 250 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	heavily altered by human activity
2	☐ Yes ☒ No	13	☐ Yes ☒ No	small and altered re: study
3	☐ Yes ☒ No	NA	☐ Yes ☒ No	no associated watercourse
4	☒ Yes ☐ No	4,5,7,9,11	☐ Yes ☒ No	area periodically discharges to road
5	☒ Yes ☐ No	1,2,13	☐ Yes ☒ No	area sporadically discharges to road
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629
7	☐ Yes ☒ No	3,9	☐ Yes ☒ No	no associated watercourse
8	☒ Yes ☐ No	1	☐ Yes ☒ No	1 - winterberry
9	☐ Yes ☒ No	12	☐ Yes ☒ No	12 - due to small size and inconspicuous nature
10	☒ Yes ☐ No	1,2,6,7	☐ Yes ☒ No	active const. nearby - assuming exposed soils will eventually be stablized, MTBE contamination
11	☐ Yes ☒ No	1	☐ Yes ☒ No	1 - erosion potential on nearby active contruction site
12	☐ Yes ☒ No	1,2,10,17	☐ Yes ☒ No	17 - by virtue of small size and being adjacent to road
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	adjacent to Route 4, very small
14	☐ Yes ☒ No	8	☐ Yes ☒ No	8 - winterberry

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: sandy bottom perennial	STREAM TYPE (ROSGEN): E
HAVE FISHERIES BEEN DOCUMENTED? ☒ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: see functions of associated wetlands previous page

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	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 10 Evaluation Date: 02/26/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	MTBE impaired groundwater, Chloride impaired runoff, several hazardous waste generators, remediation sites and underground storage tanks	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 5 (1)
2. Is there evidence of fill in the wetland?	wetland highly altered	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 5 (1)
3. What percentage of the wetland has been altered by agricultural activities?	misleading since there has been no agriculture in this area for a long time	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	misleading since area surrounding wetland has been logged for development	a. Less than 1% b. From 1 to 10 % c. More than 10 %	10 (5) 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?		a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	(10) 5 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Route 4 adjacent	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 5 (1)
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 5 (1)
10. Is there a human-made structure that regulates the flow of water through the wetland?	Route 4 is adjacent but 'down-stream' from this isolated man-made wetland which is likely a fraction of its original size due to repeated historic encroachments for development	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY

(Add scores for each question and divide by 10) 3.6

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) north, commercial (between McD's and Doggy Day Care) south	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 16' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/26/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 11 (wet flag series 'QQ')	LOCATION: (LAT/ LONG) 43 08'57.14" N/71 00' 30.05" W
WETLAND AREA: unknown - extends well outside AOI	DOMINANT WETLAND SYSTEMS PRESENT: Forested
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0 (stormwater from nearby businesses mostly)	COWARDIN CLASS: PFO
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Approximately 680' to the Oyster River	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 500 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	heavily altered by human activity near proposed impact area
2	☐ Yes ☒ No	13	☐ Yes ☒ No	not a likely choice for study, close to highway, NHB20-0629
3	☐ Yes ☒ No	NA	☐ Yes ☒ No	not directly associated watercourse, 680' to Oyster River
4	☒ Yes ☐ No	4,5,6,7,9,11	☒ Yes ☐ No	area detains stormwater from nearby businesses
5	☐ Yes ☒ No	1,2,6	☐ Yes ☒ No	6 - fine sand underlain by dense marine sediments
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629
7	☒ Yes ☐ No	3,5,7,8	☐ Yes ☒ No	not directly associated with watercourse
8	☒ Yes ☐ No	1,7,12	☐ Yes ☒ No	12 - Japanese knotweed
9	☐ Yes ☒ No	NA	☐ Yes ☒ No	strip of wetland between two commercial developments
10	☒ Yes ☐ No	1,2,4,5,6	☐ Yes ☒ No	MTBE contamination, not associated with a watercourse
11	☐ Yes ☒ No	3,14	☐ Yes ☒ No	3 - sand from de-icing,
12	☒ Yes ☐ No	1,2,5,10,30	☒ Yes ☐ No	5 - wooded swamp, 30 - designated river nearby, NHB20-0629 - poss. Lamprey & Eel nearby
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	adjacent to Route 4, sandwiched between commercial development
14	☐ Yes ☒ No	11,13	☐ Yes ☒ No	11 - wooded swamp

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: sandy bottom perennial	STREAM TYPE (ROSGEN): E
HAVE FISHERIES BEEN DOCUMENTED? ☒ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE: see functions of associated wetlands previous page	

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	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

Wetland Name/Code: 11 Evaluation Date: 02/26/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	MTBE impaired groundwater, chloride impaired runoff, several hazardous waste generators, remediation sites, UST's, commercial septic systems	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 5 (1)
2. Is there evidence of fill in the wetland?	Wetland-upland boundary appears to be man-made by filling on 3 sides	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 5 (1)
3. What percentage of the wetland has been altered by agricultural activities?	area has not seen agriculture in many years	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	misleading since area has been logged for conversion to commercial development	a. Less than 1% b. From 1 to 10 % c. More than 10 %	10 (5) 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	Japanese knotweed, cat-tail, purple loosestrife	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 (5) 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Route to the north and parking lots to the east and west	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 5 (1)
10. Is there a human-made structure that regulates the flow of water through the wetland?	stormwater catch basins from impervious surfaces on adjacent development with culverts that discharge into wetland	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 5 (1)

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 3.1

NHDES-W-06-049

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Route 4) north, commercial (Doggy Day Care) south, multi-family residential	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 26' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/26/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 12 (wet flag series 'XX')	LOCATION: (LAT/ LONG) 43 08'57.68" N/71 00' 35.83" W
WETLAND AREA: unknown-extends to Oyster River	DOMINANT WETLAND SYSTEMS PRESENT: Scrub-shrub
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1 (stream flow from north of Route 4)	COWARDIN CLASS: PSS (restoration area for nearby development)
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Approximately 500' to the Oyster River	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 0 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	original stream channel diverted
2	☐ Yes ☒ No	1,8, 13	☐ Yes ☒ No	parking may not be available when nearby development is finished, NHB20-0629
3	☐ Yes ☒ No	1,4, 14, 17	☐ Yes ☒ No	stream is likely intermittent
4	☒ Yes ☐ No	5,6,7,9,11, 13,15,18	☒ Yes ☐ No	7 - some ponding of restored wetland area, 9 - small upland contribution
5	☒ Yes ☐ No	1,2,7,12	☐ Yes ☒ No	area primarily a conveyance, discharge is north of Route 4
6	☒ Yes ☐ No	1	☒ Yes ☐ No	NHB20-0629 - poss. Lamprey and Eel in nearby Oyster River
7	☒ Yes ☐ No	3,4,5,7,8,13	☐ Yes ☒ No	septic systems in the watershed
8	☐ Yes ☒ No	1,2	☐ Yes ☒ No	2 - minimal detritus development
9	☐ Yes ☒ No	6,9	☐ Yes ☒ No	9 - access from nearby unfinished development
10	☒ Yes ☐ No	2,4,6,8,10	☒ Yes ☐ No	MTBE contamination, dog waste, small wetland, gravel parking nearby
11	☐ Yes ☒ No	4,8,9	☐ Yes ☒ No	4 - natural stream aggradation
12	☒ Yes ☐ No	1,2,9,10,18,30	☒ Yes ☐ No	30 - designated river nearby, NHB20-0629 - poss. Lamprey & Eel in Oyster River
13	☐ Yes ☒ No	NA	☐ Yes ☒ No	adjacent to Route 4, intermittent stream
14	☐ Yes ☒ No	2,8	☐ Yes ☒ No	2 - Class B assumed

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: sandy bottom intermittent	STREAM TYPE (ROSGEN): G
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☒ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☒ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: see functions of associated wetlands previous pages

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	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 12 Evaluation Date: 02/26/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	MTBE impaired groundwater, chloride impaired runoff, several hazardous waste generators, remediation sites and UST's, commercial septic systems	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?	stream has been channelized, diverted and partially restored	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 5 (1)
3. What percentage of the wetland has been altered by agricultural activities?	area has not seen agriculture for many years	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	area was logged for conversion to commercial development in 2010	a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	japanese knotweed	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 (5) 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Route 4, gravel parking, asphalt parking, access to shopping plaza	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 (5) 1
10. Is there a human-made structure that regulates the flow of water through the wetland?	culvert beneath Route 4, gabions protect slope	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 4.8

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Rt 4) and institutional north, multi-family residential east, wetland complex west	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 8' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/26/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 13 (wet flag series 'WW')	LOCATION: (LAT/ LONG) 43 08'57.67" N/71 00' 42.14" W
WETLAND AREA: unknown-extends to Oyster River	DOMINANT WETLAND SYSTEMS PRESENT: Scrub-shrub
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0 (stormwater flow from north of Route 4)	COWARDIN CLASS: PSS
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Approximately 150' north of the Oyster River	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 0 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	wetland boundary partially created by Route 4 and nearby residential development
2	☐ Yes ☒ No	1,13	☐ Yes ☒ No	not likely suitable for study, NHB20-0629 - poss. Lamprey & Eel in nearby Oyster River
3	☐ Yes ☒ No	NA	☐ Yes ☒ No	intermittent flow from stormwater runoff
4	☒ Yes ☐ No	2,5,6,7,9	☐ Yes ☒ No	2 - discharge from nearby catch basin, 7 - intermittent outlet
5	☐ Yes ☐ No	1,2,7	☐ Yes ☒ No	7 - intermittent storm flow from catch basin on north side of Route 4
6	☒ Yes ☐ No	1	☒ Yes ☐ No	NHB20-0629 - poss Lamprey & El in Oyster River - Considerations for sedimentation during const
7	☐ Yes ☒ No	3,7,8,9	☐ Yes ☒ No	8 - mostly herbaceous - sensitive fern, no watercourse
8	☐ Yes ☒ No	1,7	☐ Yes ☒ No	1 - sensitive fern, dogwood shrubs
9	☐ Yes ☒ No	6,9	☐ Yes ☒ No	9 - access from nearby gravel curb cut
10	☒ Yes ☐ No	2,4,6,7	☐ Yes ☒ No	MTBE contamination, septic systems, no associated watercourse
11	☐ Yes ☒ No	3,15	☐ Yes ☒ No	no channel flow
12	☒ Yes ☐ No	1,10,28,30	☒ Yes ☐ No	28, NRCS Conservation Easement, 30 - Oyster River designated, poss Lamprey & Eel in Oyster River
13	☐ Yes ☒ No	1,10	☐ Yes ☒ No	1 - NRCS Conservation Easement, 13 - 1 or2 spaces - Public?
14	☐ Yes ☒ No	8, 13	☐ Yes ☒ No	8 - sensitive fern, dogwood, 13 - herbaceous

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM:	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED? ☐ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☐ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

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	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 13 Evaluation Date: 02/26/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	MTBE impaired groundwater, potential chloride impaired runoff, hazardous waste generator , UST, commercial septic systems	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 (5) 1
2. Is there evidence of fill in the wetland?	fill from Route 4 and adjacent multi-family residential development	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 5 (1)
3. What percentage of the wetland has been altered by agricultural activities?	area has not been used for ag in many years	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	(10) 5 1
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	historic logging for conversion to development - more than 10 years ago	a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	reed canary grass, purple loosestrife	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 (5) 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Route 4, asphalt parking for apartment complex on east side	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 (5) 1
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 5 (1)
10. Is there a human-made structure that regulates the flow of water through the wetland?	Culvert beneath Route 4 (serves catch basin north side of Route 4 w/small watershed-mostly stormwater runoff	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 4.4

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Rt 155) and ag lands north, low density institutional east w/higher density west	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 23' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/26/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 14 (wet flag series 'C')	LOCATION: (LAT/ LONG) 43 08'33.30" N/70 56' 52.10" W
WETLAND AREA: unknown-extends to Oyster River	DOMINANT WETLAND SYSTEMS PRESENT: Emergent
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1 (mostly University ag lands)	COWARDIN CLASS: PEM (College Brook = R5UBH)
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Headwaters of College Brook	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☒ Yes ☐ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 10,700 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	wetland boundary partially created by Main St and Mast Rd., brook ditched historically
2	☐ Yes ☒ No	13	☐ Yes ☒ No	not ideally suited for study
3	☒ Yes ☐ No	4,16	☒ Yes ☐ No	species of conservation concern, intermittent?
4	☒ Yes ☐ No	1,6,7,8,9,15,16	☒ Yes ☐ No	area identified on flood maps
5	☐ Yes ☒ No	2,6,9	☐ Yes ☒ No	2 - municipal water, 6 - slowly permeable soils, 9 - stream channel ditched
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB2-0629 - no species of concern identified nearby
7	☒ Yes ☐ No	3,4,7,8,9,13	☒ Yes ☐ No	4 - manure, 8 - dense herbaceous (reed canary grass)
8	☒ Yes ☐ No	1,2,7	☐ Yes ☒ No	7 - dense herbaceous (reed canary grass)
9	☒ Yes ☐ No	9,12	☐ Yes ☒ No	12 - open fields contrast w/other land use, no open water
10	☒ Yes ☐ No	2,4,7,8 10,16	☒ Yes ☐ No	2 - manure
11	☐ Yes ☒ No	5	☐ Yes ☒ No	intermittent flow, watercourse ditched, no opportunity
12	☐ Yes ☒ No	10,19	☐ Yes ☒ No	10 - some avian utilization
13	☒ Yes ☐ No	7,10,11	☐ Yes ☒ No	7 - ag lands w/wide views, 10 - public parking?
14	☒ Yes ☐ No	7,8,13,16	☐ Yes ☒ No	16 - red shouldered hawk

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: intermittent - channelized	STREAM TYPE (ROSGEN): A6
HAVE FISHERIES BEEN DOCUMENTED? ☒ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: channel (created?)/staightened/ditched - see related functions in Section 4

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	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

Wetland Name/Code: 14 Evaluation Date: 02/26/20 Evaluator: Marc Jacobs

All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	Ag lands, animal husbandry - manure, hazaradous waste generators, remediation sites, UST's, sewer pump station	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 5 (1)
2. Is there evidence of fill in the wetland?	Route 155/MainSt/Mast Road	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 (5) 1
3. What percentage of the wetland has been altered by agricultural activities?	area historically farmed	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	10 5 (1)
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	area converted to ag land many years ago	a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	litter	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 (5) 1
6. What percentage of the wetland is occupied by invasive plant species?	reed canary grass (native-invasive), broad-leaved cat-tail, purple loosestrife	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	10 5 (1)
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Main St/Mast Road	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?		a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 5 (1)
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 5 (1)
10. Is there a human-made structure that regulates the flow of water through the wetland?	culvert beneath Main St., College Brook subject to 100 year flood	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 5 (1)

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 2.7

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: Underwood Engineers

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.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Transportation (Rt 155) institutional and ag north, formal/informal athletic fields east and south	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 10' +/- to EOP	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Marc Jacobs, CWS	
DATE(S) OF SITE VISIT(S): 02/26/20	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in field if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 15 (wet flag series 'I')	LOCATION: (LAT/ LONG) 43 08'25.99" N/70 56' 30.12" W
WETLAND AREA: unknown-extends to College Brook	DOMINANT WETLAND SYSTEMS PRESENT: Emergent
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0 (mostly sheet flow from University ag lands)	COWARDIN CLASS: PEM
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Headwaters - eventual flow to College Brook	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☒ Yes ☐ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: temporary / utility	PROPOSED WETLAND IMPACT AREA: 0 SF (012920)

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	☐ Yes ☒ No	Ecological Integrity from NH Method	☐ Yes ☒ No	area regraded, vegetated with turf grasses
2	☐ Yes ☒ No	8,13	☐ Yes ☒ No	not ideally suited for study
3	☐ Yes ☒ No	NA	☐ Yes ☒ No	intermittent runoff from sheet flow
4	☐ Yes ☒ No	5,13	☐ Yes ☒ No	13 - watercourse is man-made swale
5	☐ Yes ☒ No	2,7	☐ Yes ☒ No	mostly pass through flow
6	☐ Yes ☒ No	NA	☐ Yes ☒ No	NHB20-0629 - no species of concern identified nearby
7	☒ Yes ☐ No	4,7,9	☐ Yes ☒ No	4 - animal manure
8	☐ Yes ☒ No	10	☐ Yes ☒ No	permanent intermittent outlet
9	☒ Yes ☒ No	6,9	☐ Yes ☒ No	grass land/open space contrasts with other development
10	☐ Yes ☒ No	2,4,10	☐ Yes ☒ No	2 - animal manure, 10 - intermittent flow, minimal residence time
11	☐ Yes ☒ No	2,6,9	☐ Yes ☒ No	intermittent flow, watercourse ditched, no opportunity
12	☐ Yes ☒ No	1,9,10,17	☐ Yes ☒ No	9 - plenty of parking (public?)
13	☐ Yes ☒ No	1,10,11,12	☐ Yes ☒ No	1 -UNH athletic land, 10 - public parking?
14	☐ Yes ☒ No	7	☐ Yes ☒ No	7 - College Woods, College Brook, Oyster River

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by NHF&G; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					
6					
7					
8					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: intermittent - channelized	STREAM TYPE (ROSGEN): A6
HAVE FISHERIES BEEN DOCUMENTED? ☒ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE: channel (created?)/staightened/ditched - see related functions in Section 4

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	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland attached.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04 (please refer to the Coastal Area Worksheet for more information)

NH METHOD FOR THE EVALUATION OF FRESHWATER WETLANDS *(revised December, 2015)*

Wetland Name/Code: 15 Evaluation Date: 02/26/20 Evaluator: Marc Jacobs

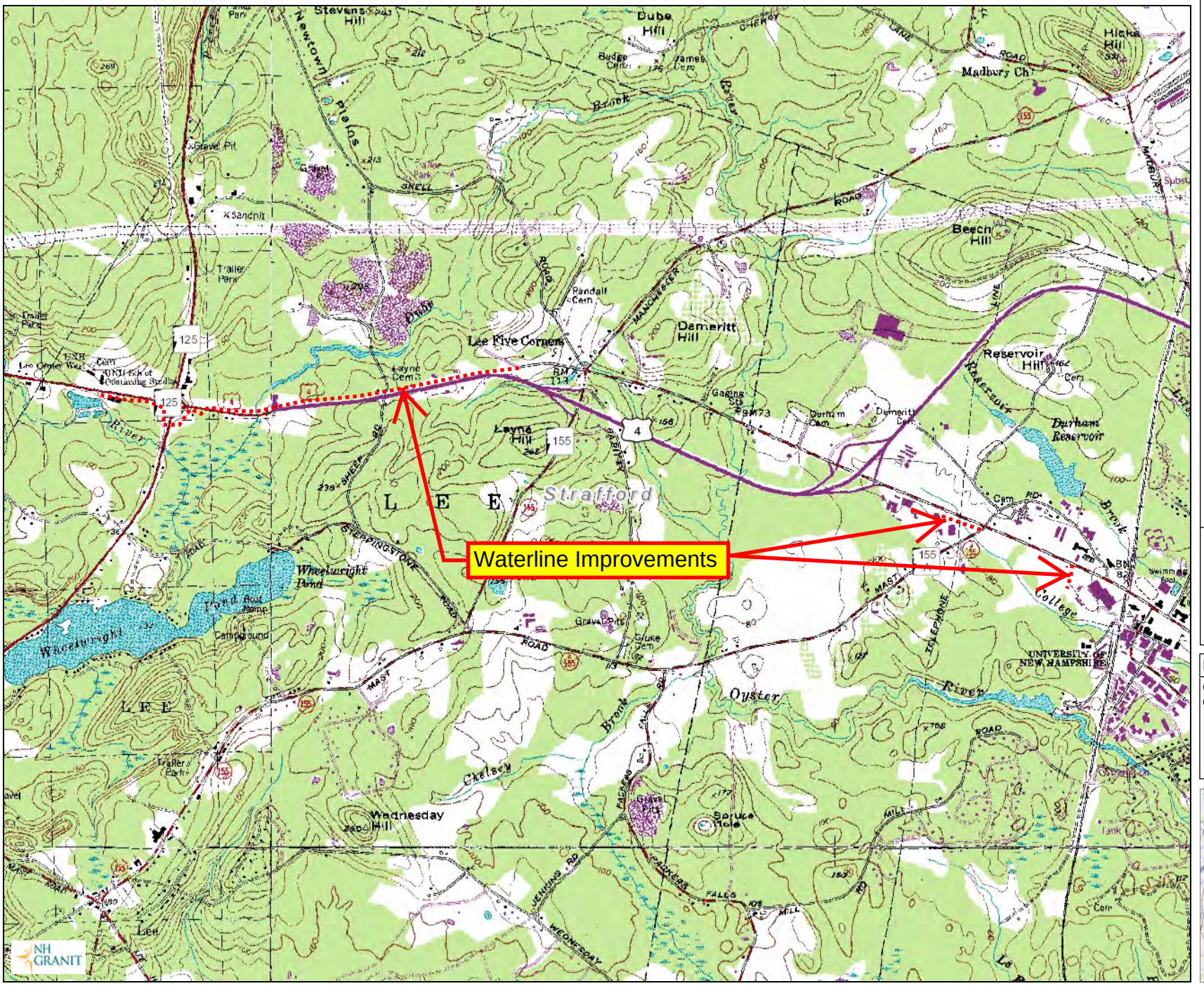
All percentages are estimates

1 – ECOLOGICAL INTEGRITY

Evaluation Questions	Observations & Notes	Answers	Score
1. Are there land uses in the wetland's watershed that could degrade water quality in the wetland?	ag land/large animal husbandry/ manure, remediation sites	a. Less than 5% of the watershed has land uses that could degrade water quality. b. 5-10% of the watershed has land uses that could degrade water quality. c. > 10% of the watershed has land uses that could degrade water quality.	10 5 (1)
2. Is there evidence of fill in the wetland?	entire area has been regraded	a. Less than 1 % b. From 1-3 % c. More than 3 %	10 5 (1)
3. What percentage of the wetland has been altered by agricultural activities?	historic agriculture	a. Less than 5 % b. From 5 to 25 % c. More than 25 %	10 5 (1)
4. What percentage of the wetland has been adversely impacted by logging activity within the last 10 years?	area cleared of trees and converted to agriculture (and more recently athletic use) historically	a. Less than 1% b. From 1 to 10 % c. More than 10 %	(10) 5 1
5. How much human activity is taking place in the wetland (e.g. ATV use, trails, cars, dumping of brush and garbage, etc.)?	grassed area used for parking occasionally (football games - tailgating)	a. Low: Few trails in use, little or no traffic, and little or no litter. b. Moderate: Some used trails, roads, litter c. High: Many trails, roads, and/or litter	10 5 (1)
6. What percentage of the wetland is occupied by invasive plant species?	none observed but the area gets regular mowing	a. None b. 1-5% of the wetland has invasive species c. > 5% of the wetland has invasive species	(10) 5 1
7. Are there roads, driveways and/or railroads crossing or adjacent to the wetland or come within 500 ft. of the wetland?	Main Street, Stadium Drive	a. No roads, driveways or railroads. within 500 ft. of, or in the wetland b. Roads, driveways, railroads are within 500 ft of the wetland c. Roads, driveways, railroads cross, or are adjacent to, the wetland	10 5 (1)
8. How much human activity is taking place in the upland within 500 feet of the wetland edge?	grass parking for football games	a. Less than 5% or no activity b. Human activity evident in up to 25% of the 500 ft zone c. Human activity evident in more than 25% of the 500 ft zone	10 5 (1)
9. What is the percent of impervious surface within 500 feet of the wetland edge?		a. Less than 3% impervious area within 500 ft of the wetland edge b. 3-10% impervious area within 500 ft of the wetland edge c. Greater than 10% impervious area within 500 ft of the wetland edge	10 5 (1)
10. Is there a human-made structure that regulates the flow of water through the wetland?	Culvert beneath Main St., other drainage also discharges to the wetland	a. No human made structures present **upstream of, or in** the wetland. b. One or more human made structures present **upstream of, or** in the wetland but hydrologic modification is slight c. One or more human made structures present **upstream of, or** in the wetland that severely block or alter surface water hydrology	10 (5) 1

AVERAGE SCORE FOR ECOLOGICAL INTEGRITY
(Add scores for each question and divide by 10) 3.2

Lee Traffic Circle Water Line Ext & UNH Water Main Improvements



Legend

EXHIBIT 1

Map Scale

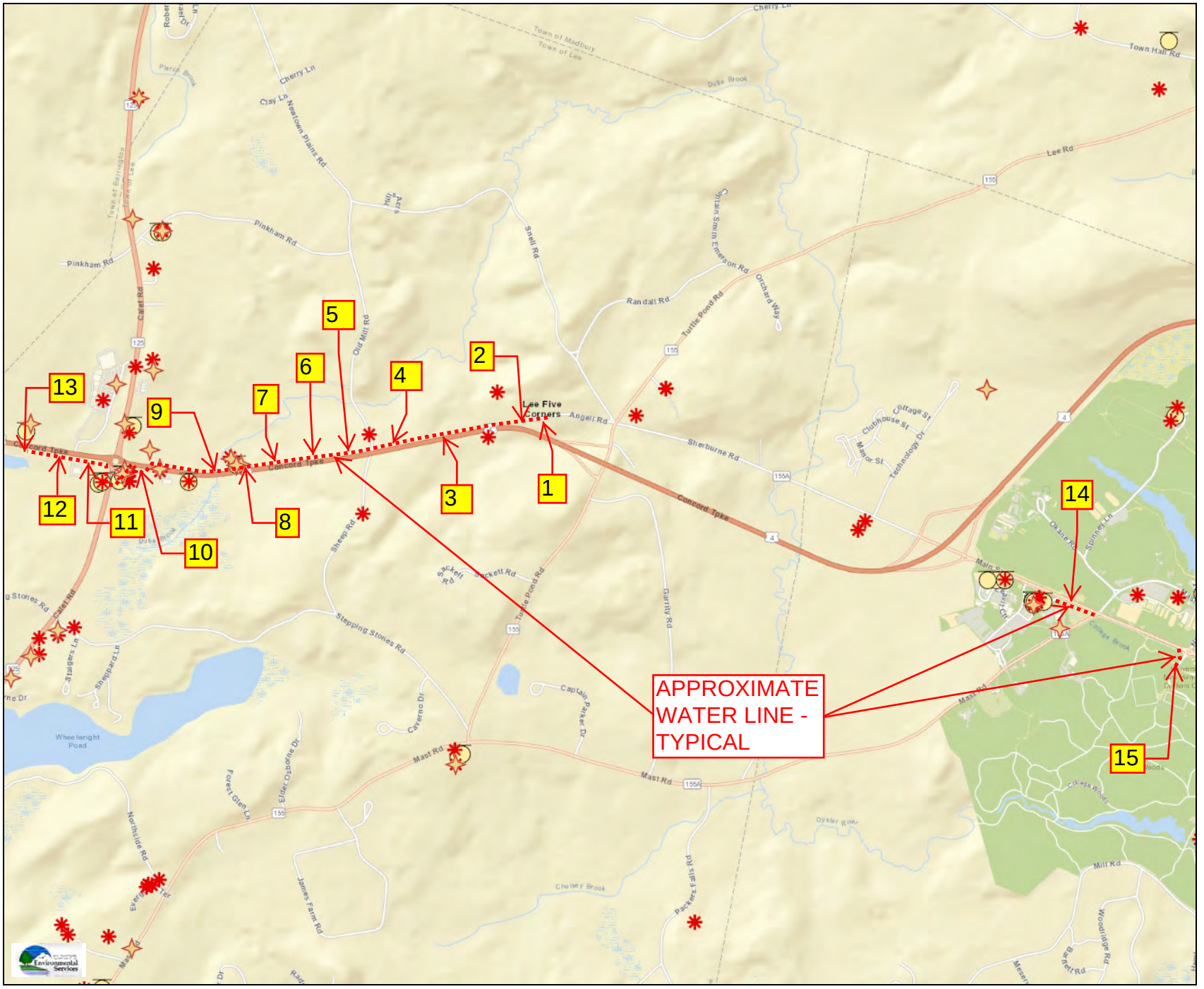
1: 31,371

Map Generated: 3/10/2020

Notes

Composite Barrington & Dover West Quadrangles

Lee Traffic Circle Water Line Ext and UNH Water Main Improvements



Legend

- Hazardous Waste Generato
- Remediation Sites
- Underground Storage Tank

EXHIBIT 2

Map Scale

1: 25,977

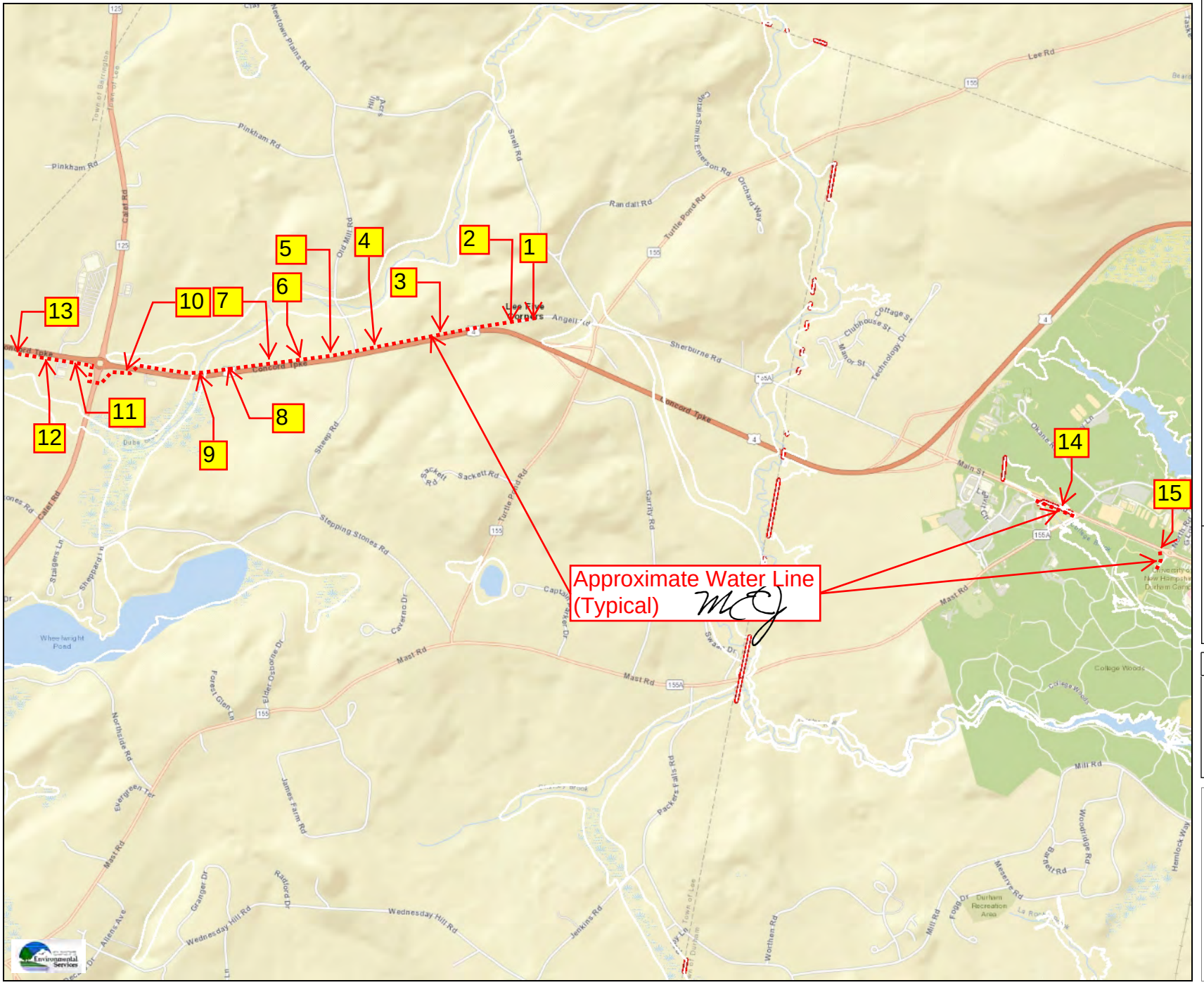
Map Generated: 3/2/2020

Notes

Hazardous Waste Generators, Remediation Sites and Underground Storage Tanks

Approximate study locations by wetland ID #

Lee Traffic Circle Water Line Ext and UNH Water Main Improvements



Legend

Flood Hazard - Lines
- SFHA/Flood Zone Boundary
- Limit Lines
- Zone Break

EXHIBIT 3

Map Scale
1: 25,977

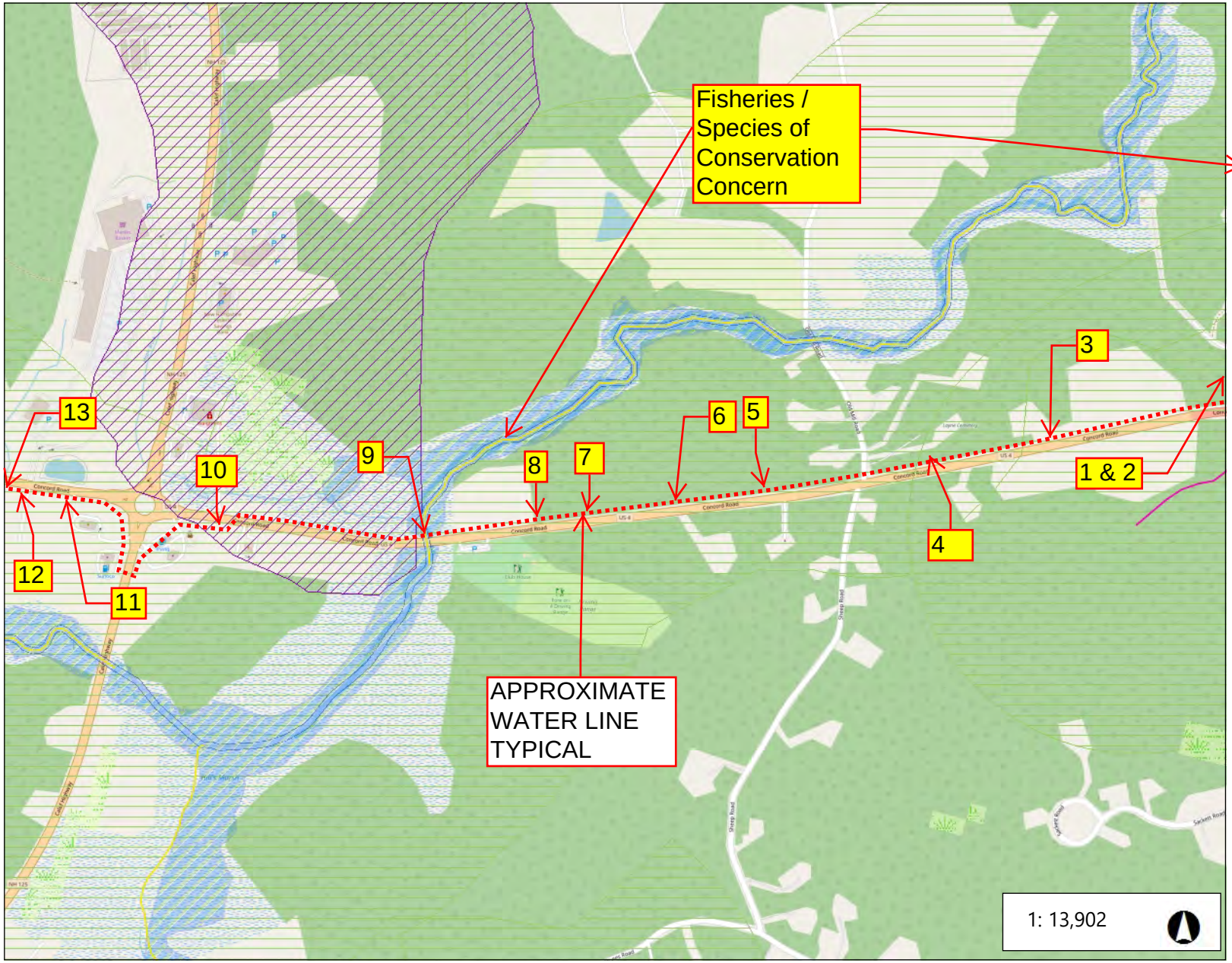
Map Generated: 3/2/2020

Notes

Approximate study locations by wetland ID #

Lee Traffic Circle Water Line Extension

EXHIBIT 4



Legend

- RiversStreams
- RiversStreams
- RiversStreams
- Floodplain Wetland Adjacent to Watercourse Tier 3
- 100' Prime Wetland Buffer
- Prime Wetland
- Peatlands
- Sand Dunes
  - backdune
  - foredune
  - interdune
  - other
- Tidal Waters / Tidal Wetlands
  - Tidal wetland
  - Transitional salt marsh
  - Salt marsh
  - Mud flat
  - Tidal water
- Designated Rivers
- Watersheds with Chloride Impa
- Surface Waters with Impairmer Quarter Mile Buffer

Map Notes

Approximate study area by wetland ID #

0.5 0 0.25 0.5 Miles

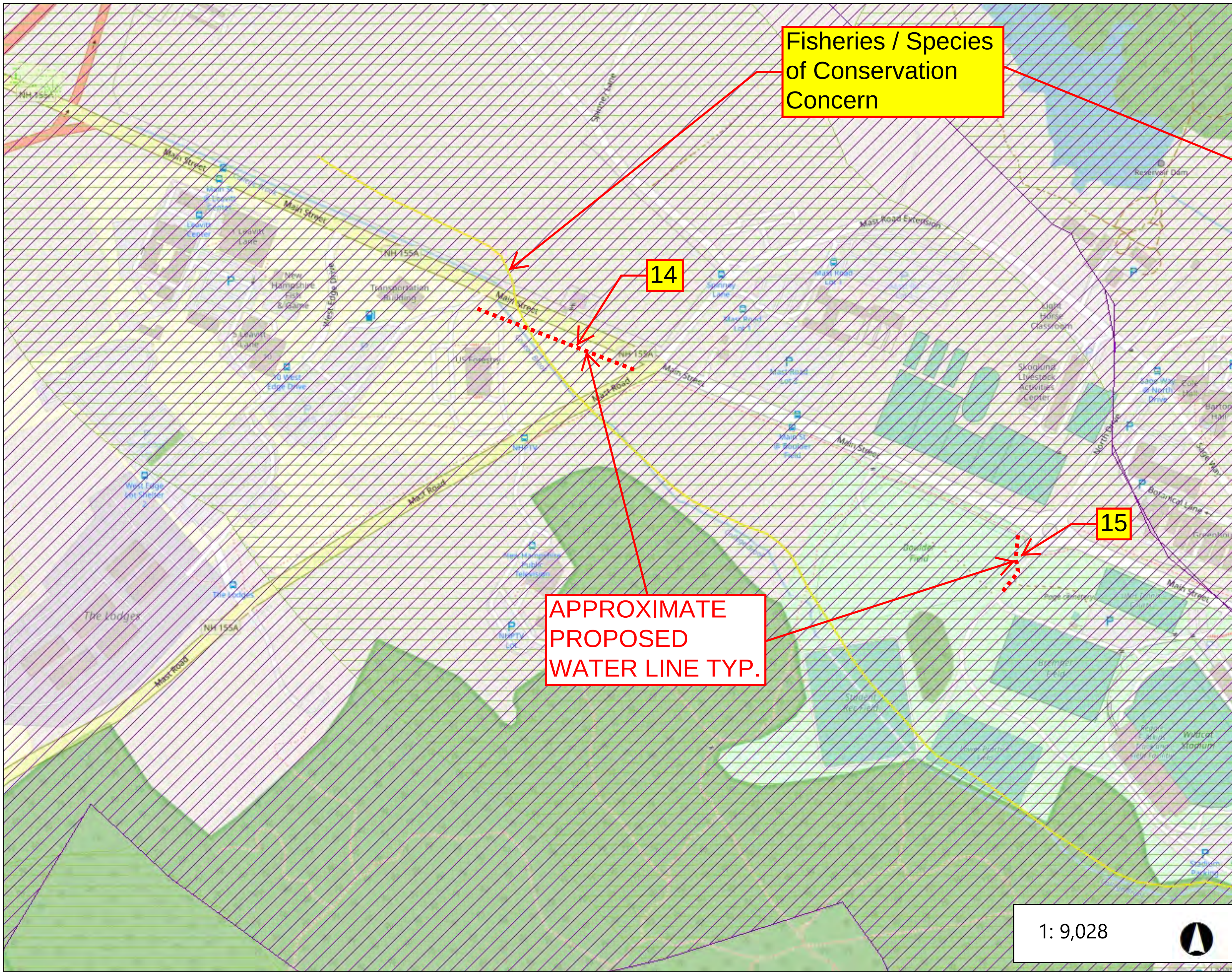
WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the web-based NHDES Wetlands Permit Scanning Tool and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. No map should be printed with scale 1 to less than 7,500.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Durham Water Main Improvements

EXHIBIT 5



Legend

- RiversStreams
- RiversStreams
- RiversStreams
- Floodplain Wetland Adjacent to Watercourse
- 100' Prime Wetland Buffer
- Prime Wetland
- Peatlands
- Sand Dunes
  - backdune
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  - Tidal wetland
  - Transitional salt marsh
  - Salt marsh
  - Mud flat
  - Tidal water
- Designated Rivers
- Watersheds with Chloride Impa
- Surface Waters with Impairmei Quarter Mile Buffer

0.3 0 0.16 0.3 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the web-based NHDES Wetlands Permit Scanning Tool and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. No map should be printed with scale 1 to less than 7,500.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Map Notes

Approximate study area by wetland ID #

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.

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.

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.

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.[1]

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

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[1]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

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.

ES

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.

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Marc Jacobs, Consulting Natural Scientist
P.O. Box 417
Greenland, NH, NH 03840-0417

From: Amy Lamb, NH Natural Heritage Bureau
Date: 3/6/2020 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB20-0629 Town: Durham & Lee Location: Work mostly located within road fill and/or at the toe-of-fill along Routes 4, 125 and 155A

Description: Water line extension to bring potable water to properties along the Lee Traffic Circle which are contaminated with MTBE. Need info on RTE species for Wetland Functional Evaluation to support eventual wetland permit application to be filed by others.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: Please refer to two work area maps below. Contact the NH Fish & Game Department.

Vertebrate species	State[1]	Federal	Notes
American Brook Lamprey (*Lampetra appendix*)	E	--	Contact the NH Fish & Game Dept (see below).
American Eel (*Anguilla rostrata*)	SC	--	Contact the NH Fish & Game Dept (see below).
Banded Sunfish (*Enneacanthus obesus*)	SC	--	Contact the NH Fish & Game Dept (see below).
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

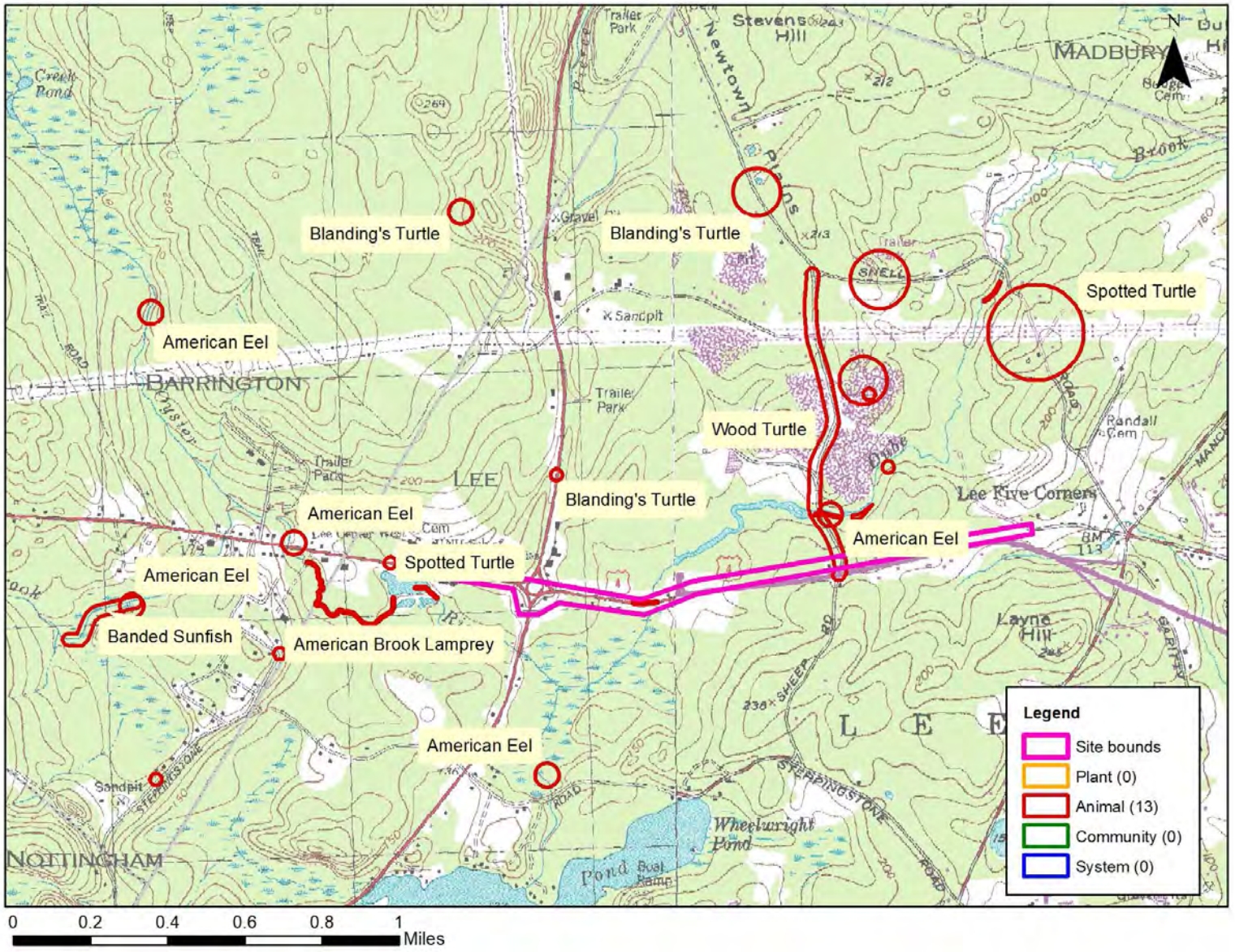
Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

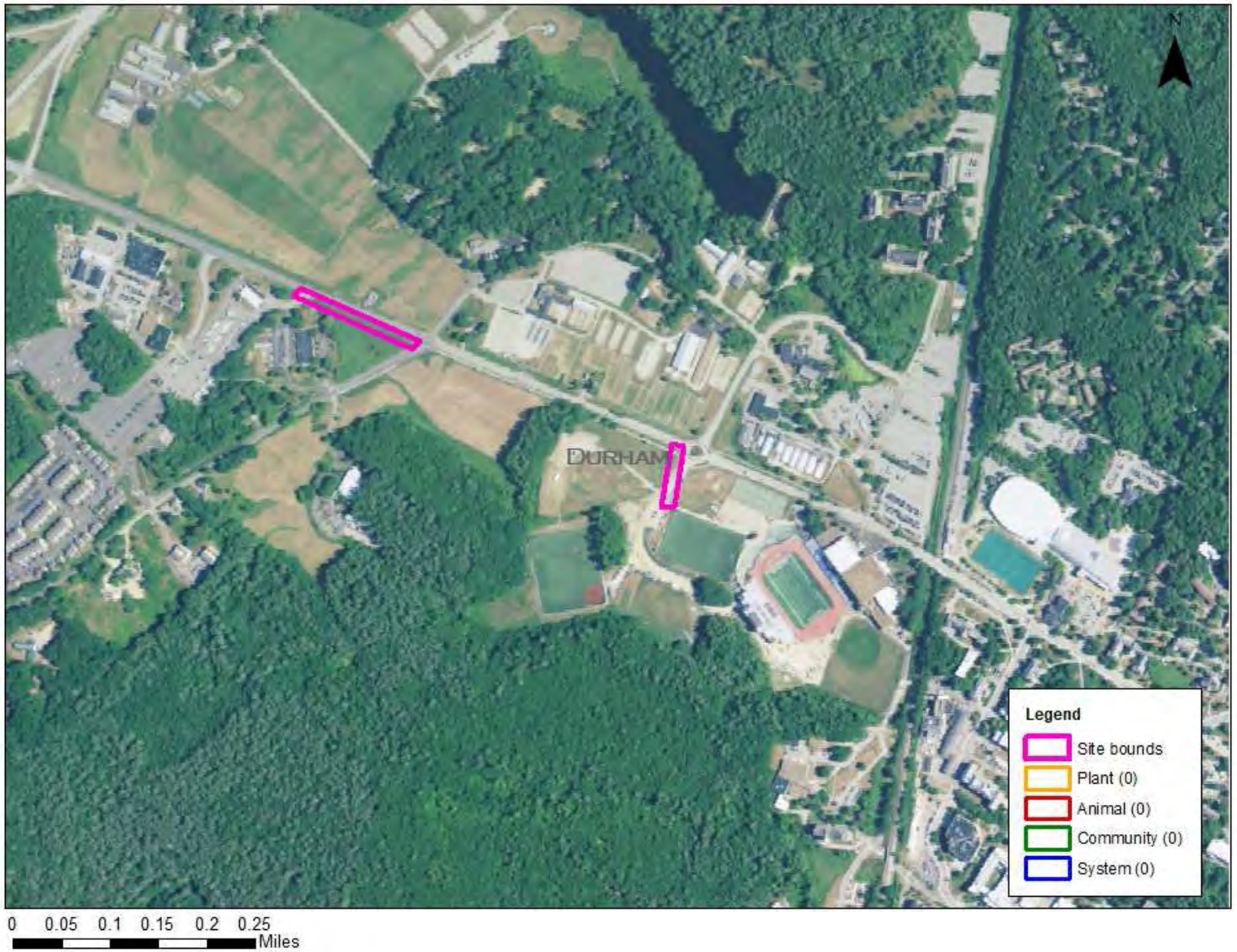
DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

NHB20-0629


Blanding's Turtle
Blanding's Turtle
American Eel
Spotted Turtle
Wood Turtle
Blanding's Turtle
American Eel
American Eel
Spotted Turtle
American Eel
Banded Sunfish
American Brook Lamprey
American Eel
BARRINGTON
LEE
NOTTINGHAM
MADBURY
Stevens Hill
Newtown Road
Lee Five Corners
Layne Hill
Wheelwright Pond
Legend
Site bounds
Plant (0)
Animal (13)
Community (0)
System (0)
0 0.2 0.4 0.6 0.8 1
Miles

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB20-0629



New Hampshire Natural Heritage Bureau - Animal Record

American Brook Lamprey (*Lampetra appendix*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	--
Detailed Description:	2007: Route 4: about a dozen juveniles less than 70mm in length.2006: Dube Brook 1: 1 adult and 5 juveniles sampled by electrofishing. Chesley Brook: 7 adults, 13 juveniles and 20 of unknown age sampled by electrofishing.2005: Dube Brook 2: 2 juveniles sampled by electrofishing.1985: Oyster River: 2 juveniles sampled by electrofishing.
General Area:	2006: Dube Brook 1, Chesley Brook: Freshwater stream or river.2005: Dube Brook 2: Freshwater stream or river.1985: Oyster River: Freshwater stream or river.
General Comments:	2007: Route 4: speculate absence of adults due to recent colonization or mortality due to sedimentation during flooding.2006: Dube Brook 1: NHFGD fish survey (electrofishing). Found ammocoetes and adult in sand/silt substrate created by debris from abandoned beaver dam. Chesley Brook: NHFGD survey (electrofishing). Dense population of adults and ammocoetes; many individuals missed. American brook lamprey coexist with a dense population of naturally reproducing brook trout. Brook appears to maintain a relatively stable temp.2005: Dube Brook 2: Sampled by electrofishing. Individuals buried in fine sediment. Voucher specimen collected.1985: Oyster River: Sampled at NHFGD Fishing for the Future index site ST285030. Index site is 300 feet long. One individual was 108 mm and other was 142 mm. Burrowed in soft bottom.
Management Comments:	--

Location

Survey Site Name:	Oyster River		
Managed By:	NRCS_WRP_Brisson		
County:	Strafford		
Town(s):	Lee		
Size:	.9 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2007: Oyster River just south of Rte. 4, west of Rte. 125.2006: Dube Brook 1: Upstream of Snell Road just downstream of powerline, below beaver impoundment. Chesley Brook: Upstream of Packers Falls Road.2005: Dube Brook 2: Ca. 50 meters downstream of Old Mill Road crossing.1985: Oyster River: Rte. 155A between Rte. 4 and Lee Five Corners.

Dates documented

First reported:	1985-07-05	Last reported:	2007

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	--
Detailed Description:	2007: Area 13285M: Not enumerated.2005: Area 13285M: 5 observed.
General Area:	--
General Comments:	2007: Area 13285M: Reshocked area sampled in 2005. Hillside collapsed due to flood and washed sediment downstream changing stream channel
Management Comments:	--

Location

Survey Site Name:	Oyster River		
Managed By:	NRCS_WRP_Peters		
County:	Strafford		
Town(s):	Lee		
Size:	1.9 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2005: Area 13285M: Downstream side of bridge crossing on Old Mill Rd in Lee.

Dates documented

First reported:	2005-09-02	Last reported:	2007-05-11

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New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2007: Area 13301: Not enumerated.
General Area: --
General Comments: 2007: Area 13301: Crossings at Emerald Acres Road and the upstream Rt 4 crossing are undersized.
Management Comments: --

Location

Survey Site Name: Oyster River
Managed By:

County: Strafford
Town(s): Barrington
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2007: Oyster River

Dates documented

First reported: 2007-05-11 Last reported: 2007-05-11

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2007: Area 13304: Not enumerated.
General Area: 2007: Area 13304: Slow flow, alder canopy, not many fish.
General Comments: --
Management Comments: --

Location

Survey Site Name: Oyster River
Managed By:

County: Strafford
Town(s): Lee
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2007: Area 13304: Oyster River Tributary, sampled upstream to 100 m above Stepping Stones Road.

Dates documented

First reported: 2007-06-22 Last reported: 2007-06-22

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2007: Area 13307: Not enumerated.
General Area: 2007: Area 13307: Hemlock canopy. Cobble, gravel, boulder, bedrock substrate. Tea colored water.
General Comments: --
Management Comments: --

Location

Survey Site Name: Oyster River
Managed By:

County: Strafford
Town(s): Barrington
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2007: Area 13307: Oyster River, from fork in stream to power lines.

Dates documented

First reported: 2007-07-02 Last reported: 2007-07-02

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2007: Area 13310: Not enumerated.
General Area: 2007: Area 13310: Sand and gravel substrate meandering through shrubby forest.
General Comments: --
Management Comments: --

Location

Survey Site Name: Oyster River
Managed By:

County: Strafford
Town(s): Barrington
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2007: Oyster River

Dates documented

First reported: 2007-07-09 Last reported: 2007-07-09

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Banded Sunfish (*Enneacanthus obesus*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	--
Detailed Description:	2007: Area 12259: 2 observed.2005: Area 8991: 3 observed. Area 8989: 1 observed. Area 8990: 1 observed. Area 8992: 3 observed. Area 8981: 2 observed. 1985: 3 observed, age and sex unknown (Obs_id 384).
General Area:	2007: Area 12259: Vegetation along the margins of small stream channels flowing through abandoned beaver impoundments.2005: Areas 8991, 8989, 8990, 8992, and 8981: Freshwater - stream or river. 1985: Freshwater - stream or river (Obs_id 384).
General Comments:	1985: 3 BDS (85,70,68 mm.) sampled by electrofishing at NHFG Fishing for the Future index site ST285030. Index site is 300 ft.long (Obs_id 384).
Management Comments:	--

Location

Survey Site Name:	Oyster River
Managed By:	NRCS_WRP_Brisson
County:	Strafford
Town(s):	Barrington
Size:	5.2 acres
Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2007: Area 12259: Upper Oyster River, downstream of Glass Road (dirt road heading south off of Rt 4) at eastern inlet to abandoned beaver impoundment.2005: Area 8991: Oyster River SW of the Lee traffic circle. Area 8989: Oyster River at Sheep Rd. just N of Rte 4. Area 8990: Oyster River just W of New Market Rd. Area 8992: Oyster River W of New Market Rd. Area 8981:Longmarsh Brook at the crossing with Longmarsh Rd. 1985: Oyster River at Rte.155A between Rte.4 and Lee Five Corners (Obs_id 384).

Dates documented

First reported:	1985-07-05	Last reported:	2007-07-13

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2007: Area 2083M: 1 observed.1998: Area 2083M: 1 adult.
General Area: 1998: Area 2083M: crossing road into small wooded area between new house construction on either side.
General Comments: --
Management Comments: --

Location

Survey Site Name: Pierce Brook
Managed By:

County: Strafford
Town(s): Lee
Size: 7.7 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 1998: Area 2083M: Small stream 1/4 mile northeast on Newtown Road after intersection with Snell Road.

Dates documented

First reported:	1998-05-30	Last reported:	2007-05-10

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2014: Area 13903: 1 adult female observed, dead on road with eggs.
General Area: 2014: Area 13903: Dead on large highway in area of commercial development.
General Comments: --
Management Comments: --

Location

Survey Site Name: Pierce Brook
Managed By:

County: Strafford
Town(s): Lee
Size: .4 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2014: Area 13903: Route 125, Lee, southbound near intersection at Market Basket plaza (43.15326, -71.00552).

Dates documented

First reported: 2014-06-30 Last reported: 2014-06-30

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2015: Area 14032: 1 adult observed.
General Area: 2015: Area 14032: Forested area with Class 6 roads and logging.
General Comments: --
Management Comments: --

Location

Survey Site Name: Swains Lake
Managed By: Samuel A Tamposi Water Supply Reserve

County: Strafford
Town(s): Barrington
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2015: Area 14032: Along woods road in Samuel A. Tamposi Water Supply Reserve.

Dates documented

First reported:	2015-06-12	Last reported:	2015-06-12

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Spotted Turtle (*Clemmys guttata*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank:	--
Detailed Description:	2019: Area 14351: 1 adult male observed. 2016: Area 14312: 1 adult observed, sex unknown. 2013: Area 13524: 1 adult female observed. 1995: Area 6446: 1 seen. Adult.
General Area:	2019: Area 14351: Roadside in rural residential neighborhood. 2016: Area 14312: On highway with wetlands on either side of road. 2013: Area 13524: Urban/suburban. Country-residential area. Shrub wetlands on both sides of road.
General Comments:	2019: Area 14351: Moved turtle across road. 2013: Area 13524: Observation comment: Moved turtle across road. Probably nesting but couldn't tell if gravid.
Management Comments:	--

Location

Survey Site Name: Wheelwright Pond Inlet
Managed By:

County: Strafford
Town(s): Lee
Size: 12.9 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2019: Area 14351: [Mt. View Road near junction with Grummet Hill Road, Barrington.]
2016: Area 14312: Route 4, Lee.
2013: Area 13524: Stepping Stone Road, Barrington approximately 0.25 miles from the Nottingham town line. In front of sandy residential driveway, wetlands on both sides of road.
1995: Area 6446: 187 Stepping Stone Road (residence).

Dates documented

First reported: 1995-06-17 Last reported: 2019-08-14

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Spotted Turtle (*Clemmys guttata*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank:	--
Detailed Description:	2012: Area 13017: 1 adult male observed.2005: Area 9311: 1 adult turtle observed crossing the road.2000: Area 1062: 1 adult seen, shell about 5" long.
General Area:	2012: Area 13017: Manmade wetlands in old gravel pit along Dube Creek.2000: Area 1062: Marshy area, water ankle deep [with] meadowsweet, grasses, iris, ferns.
General Comments:	--
Management Comments:	--

Location

Survey Site Name:	Oyster River		
Managed By:	Henry Easement		
County:	Strafford		
Town(s):	Lee		
Size:	31.4 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2012: Area 13017: Old Mill Rd Wetlands Reserve, Lee. Around the big inpoundment nearest the parking area2005: Area 9311: Route 4 at the Oyster River ca. 0.25 miles east of the Lee traffic circle.2000: Area 1062: Seepage marsh off Snell Road beneath powerlines.

Dates documented

First reported:	2000-05-30	Last reported:	2012-08-14

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Wood Turtle (*Glyptemys insculpta*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Rare or uncommon
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	--
Detailed Description:	2015: Area 14039: 1 adult observed, sex unknown. 2013: Area 13541: 1 adult female observed, dead on road. Area 13555:1 adult female observed. 1997: Area 6461: 1 seen.
General Area:	2015: Area 14039: Roadside. 2013: Area 13541: Roadside, urban/suburban. Area 13555: Manmade wetlands in old gravel pit along Dube Creek. 1997: Area 6461: Driveway adjacent to scrub-shrub wetland along Dube Brook.
General Comments:	2013: Area 13555: Observer's note: "Coming out of the Oyster River to lay in sand pit area." 1997: Area 6461: The wetland has since been moved, so all shrubs between the open water and driveway were cut.
Management Comments:	--

Location

Survey Site Name:	Newtown Plains Rd. near Sandpits
Managed By:	NRCS_WRP_Kelley
County:	Strafford
Town(s):	Lee
Size:	36.3 acres
Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2015: Area 14039: Old Mill Road, Lee.
2013: Area 13541: Route 4, Lee. Area 13555: Old Mill Road wetlands reserve.
1997: Area 6461: Driveway at 82 Snell Road.

Dates documented

First reported:	1997-06-19	Last reported:	2015-06-19

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.