STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: June 28, 2021

FROM: Andrew O'Sullivan
Wetlands Program Manager

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT: Dredge & Fill Application
Nashua-Bedford-Merrimack 13761D

TO: Karl Benedict, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Highway Design for the subject major impact project. This project is classified as major in Env-Wt 407.03(a)-Jurisdictional Area Size Thresholds. The proposed NHDOT 13761D project is part of the larger 13761 project that involves widening three (3) segments of the existing two-lane portions of the F.E. Everett Turnpike in Nashua, Merrimack, and Bedford, New Hampshire. The 13761 project has been divided into five (5) separate contracts. Based on prior discussions and agreements with NHDES and the U.S. Army Corps of Engineers (Corps), each contract will be permitted separately, and cumulative impacts will be tracked for the entire project. The 13761D contract includes the northernmost segment located in the Town of Bedford. The project begins north of the Exit 13 (Bedford toll plaza) interchange and continues north for approximately 1.3 miles through the I-293/NH Route 101 interchange. The 13761D project proposes to widen the roadway from two to three lanes in each direction with the addition of a northbound and southbound travel lane.

This project was reviewed at the Natural Resource Agency Coordination Meeting on February 21, 2018 and October 21, 2020. A copy of the minutes has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm.

NHDOT anticipates and request that this project be reviewed and permitted by the Army Corp of Engineers through the State Programmatic General Permit process. A copy of the application has been sent to the Army Corp of Engineers.

Mitigation is required for the project as there are permanent impacts to wetlands associated with construction. An in-lieu fee payment of $61,052.55 will be made to the NHDES ARM fund.

The lead people to contact for this project are Wendy Johnson, Bureau of Highway Design (271-3909 or Wendy.A.Johnson@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-0556 or Andrew.O'Sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher #66648) in the amount of $6042.00 (15,105 SF)

If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

AMO:amo
cc:
BOE Original
Town of Bedford (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Beth Alafat & Jeanie Brochi, US Environmental Protection Agency (via electronic notification)
Michael Hicks & Rick Kristoff, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

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F.E. Everett Turnpike Widening
Northern Segment

NH Standard Dredge & Fill Application

Prepared By:

McFarland Johnson

Bedford, New Hampshire
13761D

June 2021

NHDOT 13761D F.E. Everett Turnpike Widening Project Northern Segment – Bedford, NH

NHDES Standard Dredge & Fill Permit Application

June 2021

Contents

NHDES Standard Dredge and Fill Wetlands Permit Application Form

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: NH DEPARTMENT OF TRANSPORTATION **TOWN NAME:** BEDFORD

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the Waiver Request Form.

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))

Please use the Wetland Permit Planning Tool (WPPT), the Natural Heritage Bureau (NHB) DataCheck Tool, the Aquatic Restoration Mapper, or other sources to assist in identifying key features such as: priority resource areas (PRAs), protected species or habitats, coastal areas, designated rivers, or designated prime wetlands.

Has the required planning been completed?	☒ Yes ☐ No
Does the property contain a PRA? If yes, provide the following information:	☒ Yes ☐ No
• Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	☐ Yes ☒ No

• Protected species or habitat?
  ○ If yes, species or habitat name(s): See attached NHB Report
  ○ NHB Project ID #: NHB20-2699
	☒ Yes ☐ No

• Bog?	☐ Yes ☒ No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	☒ Yes ☐ No
• Designated prime wetland or duly-established 100-foot buffer?	☐ Yes ☒ No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	☐ Yes ☒ No
Is the property within a Designated River corridor? If yes, provide the following information: • Name of Local River Management Advisory Committee (LAC): N/A • A copy of the application was sent to the LAC on Month: Day: Year:	☐ Yes ☒ No

For dredging projects, is the subject property contaminated? • If yes, list contaminant: N/A	☐ Yes ☐ No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	☒ Yes ☐ No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): N/A - No stream crossings are proposed	

SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))

Provide a **brief** description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.

The proposed NHDOT 13761D project is part of the larger 13761 project that involves widening three (3) segments of the existing two-lane portions of the F.E. Everett Turnpike in Nashua, Merrimack, and Bedford, New Hampshire. The 13761 project has been divided into five (5) separate contracts. Based on prior discussions and agreements with NHDES and the U.S. Army Corps of Engineers (Corps), each contract will be permitted separately, and cumulative impacts will be tracked for the entire project. The 13761D contract includes the northernmost segment located in the Town of Bedford. The project begins north of the Exit 13 (Bedford toll plaza) interchange and continues north for approximately 1.3 miles through the I-293/NH Route 101 interchange. The 13761D project proposes to widen the roadway from two to three lanes in each direction with the addition of a northbound and southbound travel lane. Existing travel lanes will receive a mill and overlay pavement treatment. There are minor modifications to the ramps at the I-293/NH Route 101 interchange required to accommodate the widening. There is no proposed bridge work associated with the 13761D contract. The project also includes drainage improvements that will meet MS4 and AOT requirements to the extent practical. The project is tentatively scheduled to advertise in October 2021. The proposed project will require 10,785 SF of permanent impacts to palustrine wetlands associated with the roadway widening and the required grading. The project will also involve approximately 4,291 SF of temporary palustrine wetland impacts associated with construction access and installation of erosion and sediment controls. The proposed project does not involve any new or replacement stream crossings. Stream channel impacts are limited to 29 SF / 10 LF of temporary channel impacts within a small, intermittent stream. Impacts have been avoided and minimized to the maximum extent practicable.

SECTION 3 - PROJECT LOCATION

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS: F.E. Everett Turnpike Right-of-Way (ROW)

TOWN/CITY: Bedford

TAX MAP/BLOCK/LOT/UNIT: ROW

US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Patten Brook
☐ N/A

(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places): 42.94810° North
-71.47193° West

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a))

If the applicant is a trust or a company, then complete with the trust or company information.

NAME: New Hampshire Department of Transportation - Attn: Wendy Johnson		
MAILING ADDRESS: 7 Hazen Drive		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: Wendy.A.Johnson@dot.nh.gov		
FAX: (603) 271-7025	PHONE: (603) 271-3909	

ELECTRONIC COMMUNICATION: By initialing here: WAJ, I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c))

☐ N/A

LAST NAME, FIRST NAME, M.I.: Hoffmann, Stephen		
COMPANY NAME: McFarland-Johnson, Inc.		
MAILING ADDRESS: 53 Regional Drive		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03301
EMAIL ADDRESS: shoffmann@mjinc.com		
FAX:	PHONE: (603) 225-2978	

ELECTRONIC COMMUNICATION: By initialing here SH, I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b))

If the owner is a trust or a company, then complete with the trust or company information.

☒ Same as applicant

NAME:		
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL ADDRESS:		
FAX:	PHONE:	

ELECTRONIC COMMUNICATION: By initialing here , I hereby authorize NHDES to communicate all matters relative to this application electronically.

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):
Env-Wt 400: Wetland boundaries and the ordinary highwater mark and top of bank of water courses located within the project corridor were delineated in 2016, 2017, and 2020. Wetlands and surface waters have been classified using the USFWS (Cowardin et al.) Wetland Classification System. PRAs (Floodplain Wetlands Adjacent to Tier 3 Streams / Peatlands) are located in the vicinity of the project, however, impacts to these resources are not anticipated. Based on the proposed 10,785 SF of permanent impacts and 4,291 SF of temporary impacts to jurisdictional wetlands, and 29 SF / 10 LF of temporary stream impacts, the proposed project is assumed to be classified as a major impact project.

Env-Wt 500: The proposed project falls under Env-Wt 527 Public Highways. The proposed project has been designed in accordance with the criteria specified in Env-Wt 527.04 and is consistent with RSA 482-A:1, 483, 483-B, 485-A, and 212-A. The purpose of the proposed project is to provide improved mobility, congestion relief, and improved safety along the project corridor. The proposed project is not anticipated to impact any floodplains or substantially impact the flood storage function of wetlands. Impacts have been minimized and avoided to the maximum extent practicable.

Env-Wt 600: N/A - No coastal or tidal wetlands present.

Env-Wt 700: N/A - No designated Prime Wetlands present.

Env-Wt 900: N/A - No stream crossings proposed.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization and the Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet. For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the Avoidance and Minimization Checklist, the Avoidance and Minimization Narrative, or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation pre-application meeting must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: 10 Day: 21 Year: 2020

(☐ N/A - Mitigation is not required)

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: ☒ I confirm submittal.

(☐ N/A – Compensatory mitigation is not required)

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/rivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland	1,150		☐	1,115		☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland	9,635		☐	3,176		☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface Water	Intermittent / Ephemeral Stream			☐	29	10	☐
	Perennial Stream or River			☐			☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River			☐			☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		10,785			**4,320**	**10**	

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

☐ **MINIMUM IMPACT FEE**: Flat fee of $400.

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of $400 (refer to RSA 482-A:3, 1(c) for restrictions).

☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:

Permanent and temporary (non-docking):	15,105 SF	× $0.40 =	$ 6042.00
Seasonal docking structure:	0 SF	× $2.00 =	$ 0
Permanent docking structure:	0 SF	× $4.00 =	$ 0
Projects proposing shoreline structures (including docks) add $400 =			$ 0
		Total =	$ 6042.00

The application fee for minor or major impact is the above calculated total or $400, whichever is greater =	$ 6042.00

SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)

Indicate the project classification.

☐ Minimum Impact Project	☐ Minor Project	☒ Major Project

SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)

Initial each box below to certify:

Initials: WAJ	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: WAJ	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
Initials: WAJ	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
Initials: WAJ	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.

SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)

SIGNATURE (OWNER): Wendy A. Johnson	PRINT NAME LEGIBLY: Wendy Johnson	DATE: 05/24/2021
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE): Stephen Hoffmann	PRINT NAME LEGIBLY: Stephen Hoffmann	DATE: 06/08/2021

SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))

As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

TOWN/CITY CLERK SIGNATURE: RSA 482-A:3, I(a) Exempt, State agency, 4 copies sent certified mail.	PRINT NAME LEGIBLY:

	RSA 482-A:3 I(a) Exempt, State agency, 4 copies sent certified mail.
TOWN/CITY: Bedford	DATE: N/A

DIRECTIONS FOR TOWN/CITY CLERK:
Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:
Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to “Treasurer – State of NH”.

Supplemental Project Description

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

F.E. EVERETT TURNPIKE WIDENING PROJECT

NHDOT - 13761D

BEDFORD, NEW HAMPSHIRE

SUPPLEMENTAL PROJECT DESCRIPTION

Contents

Introduction

The proposed NHDOT 13761D project is part of the larger Nashua-Merrimack-Bedford 13761 project that involves widening three (3) segments of the existing two-lane portions of the F.E. Everett Turnpike (F.E.E.T.) in Nashua, Merrimack, and Bedford, New Hampshire. The 13761 project has been divided into five (5) separate contracts. Based on prior discussions and agreements with NHDES and the Corps, each contract will be permitted separately, and cumulative impacts will be tracked for the entire project. This permit application is for the 13761D contract, which includes the northernmost project segment located in the Town of Bedford. The project begins north of the Exit 13 (Bedford toll plaza) interchange and continues north for approximately 1.3 miles through the 1-293/NH Route 101 interchange. The 13761D project proposes to widen the roadway from two to three lanes in each direction through the addition of a northbound and southbound travel lane. Existing travel lanes will receive a mill and overlay pavement treatment. There are minor modifications to the ramps at the I-293/NH Route 101 interchange required to accommodate the widening. There is no proposed bridge work associated with the 13761D contract. The project also includes drainage improvements that will meet the MS4 and AOT requirements to the extent practical. The project is tentatively scheduled to advertise in October 2021.

Purpose & Need

The purpose of the F.E. Everett Turnpike Widening Project is to improve transportation efficiency and reduce safety problems associated with turnpike congestion in Nashua, Merrimack, and Bedford for all users of the turnpike while being sensitive to the needs of local communities, residents, and natural and cultural resources.

The F.E.E.T. is a principal north-south arterial highway within the State of New Hampshire and is part of the New Hampshire Turnpike System. The F.E.E.T. begins at the New Hampshire-Massachusetts State Line, where it is a continuation of US Route 3, and continues north 39.5 miles to Exit 14 in Concord, NH. It includes portions of Interstates 93 and 293 and provides a vital link for north-south travel. The F.E.E.T. carries a mix of traffic including trucks, cars, and buses, as well as commercial traffic vital to the region's economy. The F.E.E.T. corridor serves as a regional commuting route for residents of New Hampshire and Massachusetts as well as an important local route for the communities of Nashua, Merrimack, Bedford, and other surrounding municipalities. It also serves as an important link for New England-wide travel to population centers such as Nashua, Manchester, and Concord, as well as to tourist destinations such as the New Hampshire Lakes Region, White Mountains, and ski areas. As one of the main arterials in the New Hampshire highway system, it is important to maintain the mobility of people, goods and services through this corridor.

Existing Conditions

The Northern Segment (13761D) of the F.E. Everett Turnpike Widening Project is located in Bedford, NH. Wetlands and surface waters proximal to the proposed project were delineated by McFarland-Johnson, Inc. (MJ) in 2016, 2017, and 2020. A detailed description of the delineated wetlands and surface waters is provided in the attached Wetland Delineation Report included with this submittal. The majority of the wetlands in the vicinity of the project consist of palustrine forested wetlands and palustrine emergent

wetlands. The Merrimack River is located east of the F.E. Everett Turnpike and will not be impacted by the proposed project. The proposed project is not located within the Protected Shoreland (250' from the Reference Line/ordinary high water) of the River, and this section of the Merrimack is not a NH Designated River. Surface waters located within the 13761D project area include Patten Brook (S-10), two unnamed intermittent streams (S-11/S-15 and S-12), and Bowman Brook (S-17) as well as some small ponds (PUBH) located within Wetlands 40, 44, and 47. All four of the streams in the project area are tributaries of the Merrimack River. Patten Brook and Bowman Brook are mapped as 3rd order streams and are not included on the NHDES Consolidated List of Water Bodies Subject to the Shoreland Water Quality Protection Act.

According to the NHDES Wetlands Permit Planning Tool, there are Priority Resource Areas (PRAs) located within the project area and in the general vicinity. PRAs include peatlands located west of the Turnpike near the southern limits of the project and Floodplain Wetlands Adjacent to Tier 3 Streams in the vicinity of Patten Brook and Bowman Brook. There are no NH Designated Prime Wetlands located in the Town of Bedford. The Town of Bedford has completed a separate study that identifies Wetlands of Exceptional Value. None of the wetlands identified as Wetlands of Exceptional Value are located in the vicinity of the proposed project.

Proposed Project

The 13761D project proposes to widen the roadway from two to three lanes in each direction through the addition of a northbound and southbound travel lane. Existing travel lanes will receive a mill and overlay pavement treatment. There are minor modifications to the ramps at the I-293/NH Route 101 interchange required to accommodate the widening. There is no proposed bridge work associated with the 13761D contract. No new or replacement stream crossings are proposed.

In the vicinity of Patten Brook a reinforced earth slope is proposed on the west side of the F.E. Everett Turnpike and on the east side a stone fill slope is proposed. The steepened, reinforced slopes will accommodate the proposed highway widening while avoiding the need for replacement and/or extension of the existing 72" RCP that carries Patten Brook under the Turnpike. Impacts to Patten Brook and the adjacent PRA floodplain wetlands have been avoided.

The project also includes stormwater and drainage improvements that will meet the MS4 and AOT requirements to the extent practical. The proposed project includes the installation/construction of two (2) wet extended detention basins lined with impervious soil to help maintain a permanent pool, and four (4) treatment swales. The first stormwater pond BMP is located near the southern end of the project (STA 1334+50 – 1338+50). The second stormwater pond BMP is located within the I-293 / NH Route 101 interchange (STA 1372+50 – 1374+50). The proposed treatment swales are located at STA: 1385+00 to 1388+00 Left; 1385+00 to 1387+00 Right; 1400+00 to 1402+00 Right; and 1403+65 to 1405+00 Left. The six (6) proposed treatment BMPs treat approximately 12.5 acres of pavement or approximately half of the proposed disturbed impervious area.

Construction Sequence

Please refer to the construction sequencing included with the Erosion Control Plans that are included with this submittal.

Impacts

The proposed project will require 10,785 SF of permanent impacts to palustrine wetlands associated with the roadway widening and the required grading. The project will also involve approximately 4,291 SF of temporary palustrine wetland impacts associated with construction access and installation of erosion and sediment controls. No new or replacement stream crossings are proposed. However, temporary stream impacts are required within intermittent stream S-15 for temporary dewatering to allow for the installation of a manhole and other drainage system improvements. Temporary stream impacts from the project total 29 SF and 10 LF. There are no permanent stream impacts proposed. Impacts to Patten Brook and the associated adjacent wetlands (PRA's Floodplain Wetlands Adjacent to Tier 3 Stream) have been avoided completely by incorporating a reinforced earth slope and a steepened stone fill slope into the design. No impacts to Bowman Brook are proposed. Work at the northern end of the project in the vicinity of Bowman Brook is limited to mill and overlay pavement treatment. Impacts have been avoided and minimized to the maximum extent practicable. Refer to the subsequent Minimization and Avoidance Measures below for additional details.

Avoidance and Minimization Measures

Impacts to jurisdictional resource areas have been avoided and minimized to the maximum extent practicable while still accomplishing the purpose and need of the project. The location of the proposed project and widening alternatives is constrained by the location of the existing Turnpike infrastructure that was originally constructed in the 1950s and 1960s, the Route 101 interchange reconfiguration completed in the early 1990's as well as the replacement of the US Route 3 Bridge completed in 2013. The overall permanent impacts were reduced from an estimated 20,861 SF of wetland impacts and 168 LF of stream impacts during preliminary design, to 10,785 SF of permanent wetland impacts and no permanent stream impacts during final design.

Avoidance and minimization measures include refining and steepening roadway slopes to specifically avoid and minimize wetland and stream impacts. The proposed project does not involve any construction of new or replacement stream crossings. A reinforced earth slope and a steepened stone fill slope have been incorporated into the design in order to completely avoid wetland and stream impacts in the vicinity of Patten Brook at the southern end of the interchange area. Additional information on avoidance and minimization measures is included in the Avoidance and Minimization Checklist (NHDES-W-06-050) and Avoidance and Minimization Written Narrative (NHDES-W-06-089) included with this submittal.

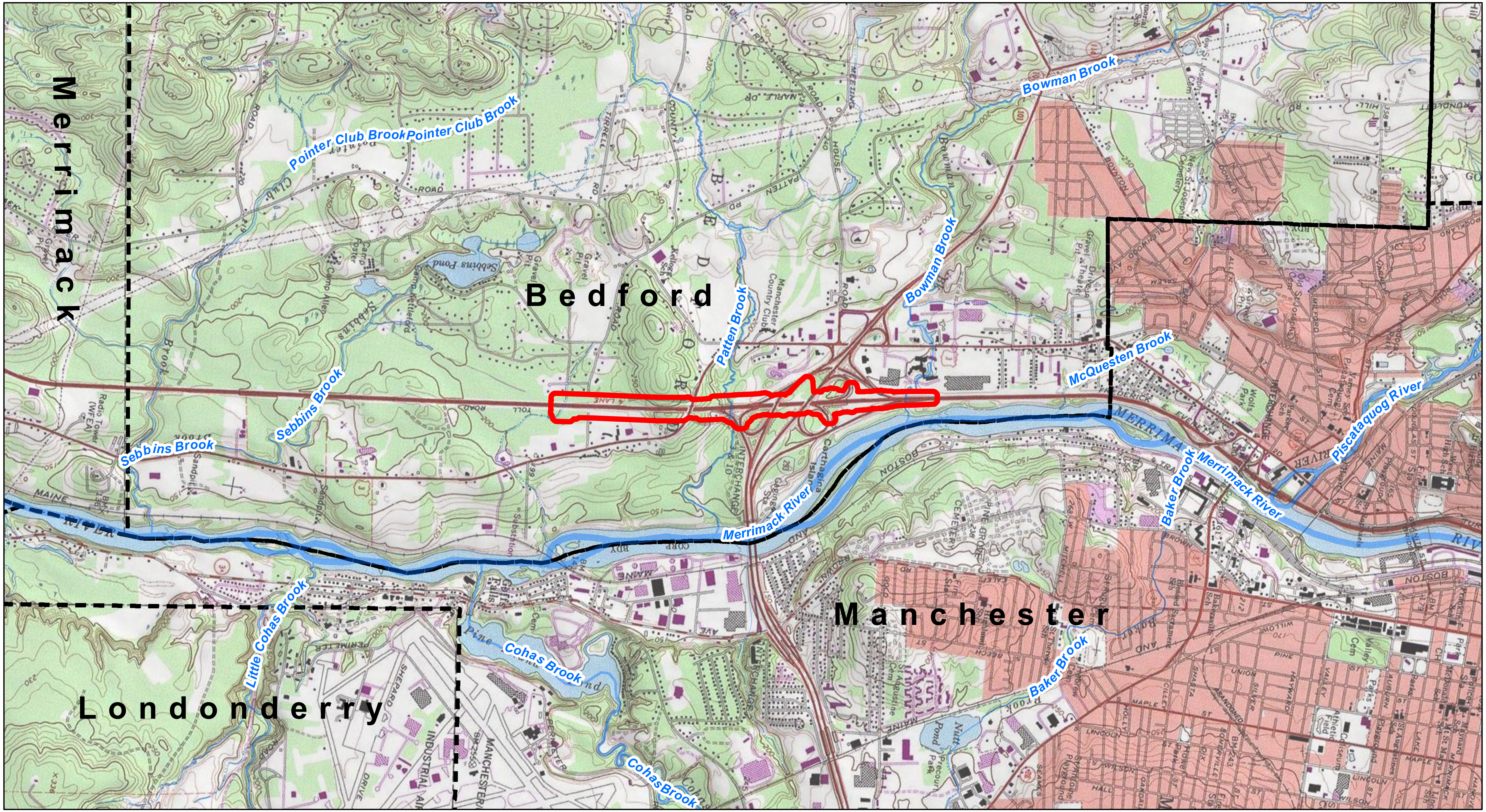
Mitigation Approach

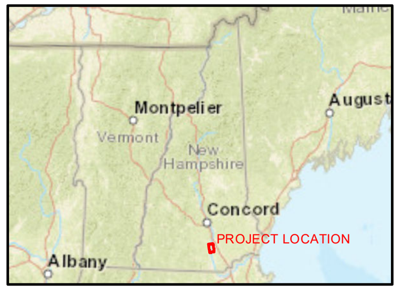
The proposed mitigation for permanent wetland impacts will consist of an in-lieu fee payment to the Aquatic Resource Mitigation (ARM) Fund. Information on proposed mitigation can be found in the Mitigation Narrative included with this submittal.

Easements

The majority of the proposed project will be located within the existing state-owned right-of-way (ROW). ROW acquisitions are required for the installation of the stormwater BMP near the southern limits of the project. Easements will be required from parcels B30 and B34 (STA 1339+00). All necessary easements will be obtained by the NHDOT Bureau of Right-of-Way prior to the start of construction.

Location Map





13761D FEET Northern Segment Project Area
Towns
Streams

0 2,000 4,000
Feet

NHDOT 13761D FEET NORTH
BEDFORD, NEW HAMPSHIRE

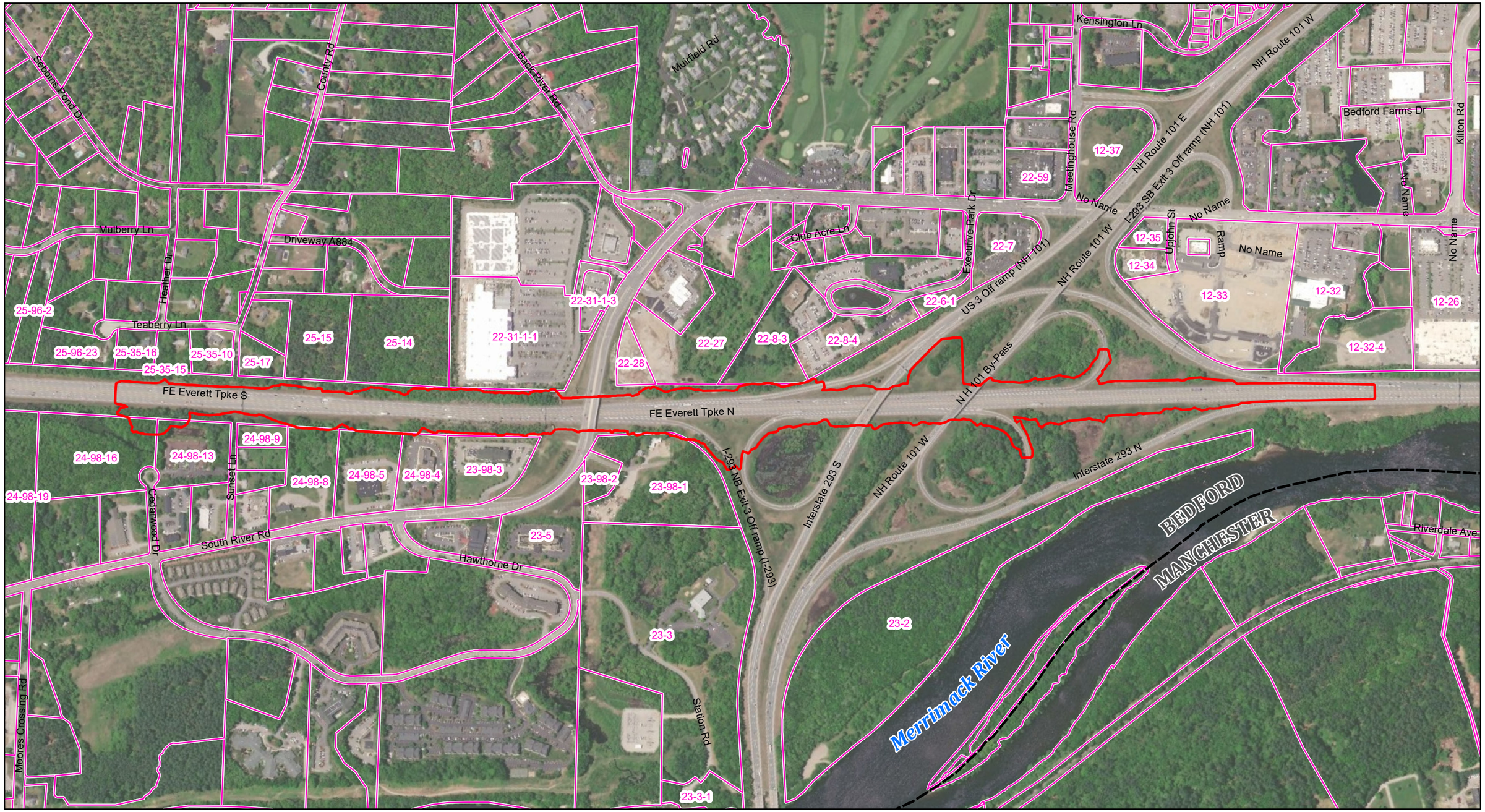
PROJECT LOCATION MAP

SCALE :	DATE :	FIGURE :
1 inch = 2,000 feet	OCTOBER 2020	1

McFarland Johnson

M:\18539.00 CHA-North FEET Permitting\Draw\GIS\Wetland Permit Figures\Figure 1 - USGS Location Map FEET North.mxd

Tax Map



13761D Project Limits

Town Boundary

Tax Parcels

0 600 1,200

Feet

NHDOT 13761D FEET NORTH

BEDFORD, NEW HAMPSHIRE

TAX MAP

SCALE :	DATE :	FIGURE :
1 inch = 600 feet	DECEMBER 2020	2

McFarland Johnson

M:\18539.00 CHA-North FEET Permitting\Draw\GIS\Wetland Permit Figures\Figure 2 - FEET North Tax Map.mxd

Attachment A: Minor and Major Projects

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION ATTACHMENT A: MINOR AND MAJOR PROJECTS

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: **Wendy Johnson, NHDOT** **TOWN NAME:** BEDFORD

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the Avoidance and Minimization Narrative or Checklist that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization.

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

THE F.E. EVERETT TURNPIKE WAS ORIGINALLY CONSTRUCTED IN THE 1950S AND 1960S AND HAS BEEN LOCATED ON THE EXISTING ALIGNMENT SINCE THAT TIME. THE PROPOSED PROJECT IS NEEDED TO ADDRESS THE SAFETY CONCERNS RELATED TO INCREASED TRAFFIC CONGESTION. DUE TO THE LOCATION OF THE EXISTING HIGHWAY AND ASSOCIATED INFRASTRUCTURE, THERE ARE LIMITED ALTERNATIVES FOR THE PROPOSED HIGHWAY WIDENING. IMPACTS TO JURISDICTIONAL RESOURCE AREAS INCLUDING WETLANDS, STREAMS, AND BANKS HAVE BEEN AVOIDED AND MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE THROUGH STEEPENING ROADWAY SLOPES AND INCORPORATING A REINFORCED EARTH SLOPE AND A STONE FILL SLOPE IN THE VICINITY OF PATTEN BROOK AT THE SOUTHERN END OF THE INTERCHANGE AREA.

SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

There are two relatively large, non-tidal, cattail marshes located on the east and west side of the Turnpike near the northern limits of the proposed project. These two wetland areas are bisected by the Turnpike and were likely part of the same wetland system prior to the construction of the existing Turnpike. The edges of the existing wetlands are located < 20 feet from the edge of the existing pavement along much of the length of the wetland. Impacts were minimized to the maximum extent practicable, but due to the close proximity to the existing roadway, impacts could not be completely eliminated. There are no open water areas or streams associated with the marsh in the vicinity of the proposed impacts. The proposed project is not anticipated to have a substantial effect on populations of fish, aquatic invertebrates, or wildlife of significant value.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

The proposed widening project does not involve any permanent stream impacts, new stream crossings, or the replacement of existing crossings. Existing culvert crossings that carry streams and/or provide hydrologic connections between wetland areas will be maintained. The proposed project is not anticipated to impact the hydrologic connections between adjacent wetlands and or stream systems.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

Wetland impacts have been avoided and minimized to the maximum extent practicable. Wetland impacts have been reduced from an estimated 20,861 SF of permanent impacts and 168 LF of permanent stream channel impacts during preliminary design, to 10,785 SF of permanent wetland impacts, 4,291 SF of temporary wetland impacts, and 29 SF / 10 LF of temporary stream impacts. The proposed project is not anticipated to impact any exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and/or habitat and reproduction areas for species of special concern. Coordination with the NH Natural Heritage Bureau, NH Fish and Game, and the US Fish and Wildlife Service has occurred and there are no exemplary natural communities located in the vicinity of the proposed project. A vernal pool survey was completed in the Spring of 2017 and no vernal pools were identified in the vicinity of the Northern project segment. Direct stream impacts have been avoided and minimized to the maximum extent practicable, and appropriate sediment and erosion controls will be implemented throughout construction to avoid detrimental water quality impacts. Stormwater treatment BMPs have also been incorporated into the design in order to treat runoff from additional pavement surfaces, thereby ensuring water quality of surface waters in the vicinity is maintained.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

The proposed project is not anticipated to eliminate, depreciate, or obstruct public commerce, navigation, or recreation. Impacts to wetland resource areas are in close proximity to the existing roadway and are primarily located within the existing right-of-way. The proposed highway widening will reduce traffic congestion and increase safety, improving public commerce and navigation.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

Impacts to floodplain wetlands have been avoided and minimized to the maximum extent practicable. Wetlands in the vicinity of Patten Brook are located within the FEMA mapped 100-year floodplain (Zone A). Wetland and stream impacts at this location have been completely avoided through the incorporation of a reinforced earth slope and a steepened stone fill slopes into the design. Some of the larger wetlands in the vicinity of the proposed project also provide flood storage potential. Impacts to these wetlands have been avoided and minimized wherever possible. Wetland impacts are limited to the edges of existing wetlands. The overall impacts to the flood storage potential of the larger wetland areas are limited.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

The proposed project has avoided and minimized impacts to all wetland areas including natural riverine forested wetland systems and scrub-shrub-marsh complexes of high ecological integrity. There are no high-quality scrub-shrub-marsh complexes located proximal to the project area. The majority of the wetlands located in the vicinity of the project consist of forested wetlands and palustrine emergent marshes, ditches, and wet meadows. There are a total of four (4) existing stream crossings located within the project area. There are forested wetland systems associated with all of these streams. Patten Brook (S-10) is a perennial stream located south of the interchange area with associated forested floodplain wetlands. Impacts to Patten Brook and the associated wetlands have been completely avoided by incorporating a reinforced earth slope and steepened stone fill slopes into the design at this location. S-11/S-15 (same stream) and S-12 are unnamed intermittent streams located within the interchange area. Forested wetlands (W-45, W-44 and W-48) are located adjacent to these small streams. Permanent riverine forested wetland and stream impacts have been avoided completely and the proposed project is anticipated to result in approximately 75 SF of temporary impacts to the forested wetland, W-45, associated with stream S-15. Approximately 29 SF and 10 LF of temporary channel impacts are required within S-15 in the vicinity of the existing culvert inlet. Impacts are associated with temporary dewatering for the installation of drainage system improvements. Bowman Brook is a perennial stream located immediately north of the project area with adjacent forested areas. The proposed project will not impact Bowman Brook or any of the adjacent forested wetland areas.

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

The proposed project has avoided and minimized wetland impacts to maximum extent practicable. Best management practices for soil erosion and sediment control will be implemented throughout the duration of the project in order to further protect water quality. The proposed project is not anticipated to have a detrimental impact on adjacent drinking water supply and groundwater aquifer levels or the wetlands that provide these functions. Wetland impacts are limited to the edges of existing wetlands. Large wetland areas that provide groundwater recharge/discharge will remain largely intact. The proposed project also includes six (6) proposed stormwater BMPs to help protect water quality, including: two (2) wet extended detention basins; and four (4) vegetated treatment swales.

There is a non-transient, non-community public water supply well located just east of the existing right-of-way, located on the parcel at 264 South River Road (B41 / 24-98-5). However, the well is 'inactive' and the proposed project is not anticipated to impact the well.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

The proposed project has completely avoided all permanent impacts to stream channels. Approximately 29 SF and 10 LF of temporary impacts are required within the channel of intermittent stream S-15 for the installation of a temporary water diversion structure. Water diversion is required for drainage upgrades including the installation of a manhole in the shoulder of the Turnpike in the vicinity of the S-15 culvert inlet.

Stormwater runoff from the project area will be directed towards stormwater treatment BMPs in order to maintain water quality. Streams in the project area are not anticipated to experience substantial increases in flow due to additional contributions from stormwater runoff.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

The proposed project does not propose any new stream crossings or replacements of existing stream crossings. There are no permanent impacts to surface waters associated with the proposed project. Minor temporary impacts are required within the channel of intermittent stream S-15 in the vicinity of the culvert inlet. Temporary impacts total 29 Sf and 10 LF and are associated with temporary dewatering for the installation of drainage improvements including a manhole in the shoulder of the Turnpike.

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

N/A - The proposed project does not involve any shoreline structures.

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

N/A - The proposed project does not involve any shoreline structures.

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.

N/A - The proposed project does not involve any shoreline structures.

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

N/A - The proposed project does not involve any shoreline structures.

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

N/A - The proposed project does not involve any shoreline structures.

PART II: FUNCTIONAL ASSESSMENT
REQUIREMENTS Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED: US Army Corps of Engineers New England District Highway Methodology Workbook Supplement, 1999 Edition
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: CHRISTINE PERRON, CWS
DATE OF ASSESSMENT: NOVEMBER 2020
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT: ☒
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable: ☐ Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

NHDES Avoidance and Minimization Checklist

AVOIDANCE AND MINIMIZATION CHECKLIST

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/ Env-Wt 311.07(c)

This checklist can be used in lieu of the written narrative required by Env-Wt 311.07(a) to demonstrate compliance with requirements for Avoidance and Minimization (A/M), pursuant to RSA 482-A:1 and Env-Wt 311.07(c).

For the construction or modification of non-tidal shoreline structures over areas of surface waters without wetland vegetation, complete only Sections 1, 2, and 4 (or the applicable sections in Attachment A: Minor and Major Projects (NHDES-W-06-013).

The following definitions and abbreviations apply to this worksheet:

- "A/M BMPs" stands for Wetlands Best Management Practice Techniques for Avoidance and Minimization dated 2019, published by the New England Interstate Water Pollution Control Commission (Env-Wt 102.18).
- "Practicable" means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes (Env-Wt 103.62).

SECTION 1 - CONTACT/LOCATION INFORMATION		
APPLICANT LAST NAME, FIRST NAME, M.I.: Johnson, Wendy, New Hampshire Department of Transportation		
PROJECT STREET ADDRESS: F.E. EVERETT TURNPIKE		PROJECT TOWN: BEDFORD
TAX MAP/LOT NUMBER: ROW		
SECTION 2 - PRIMARY PURPOSE OF THE PROJECT		
Env-Wt 311.07(b)(1)	Indicate whether the primary purpose of the project is to construct a water-access structure or requires access through wetlands to reach a buildable lot or the buildable portion thereof.	☐ Yes ☒ No

If you answered "no" to this question, describe the purpose of the "non-access" project type you have proposed:

The purpose of the proposed F.E. Everett Turnpike widening project is to improve transportation safety and efficiency by reducing traffic congestion.

SECTION 3 - A/M PROJECT DESIGN TECHNIQUES Check the appropriate boxes below in order to demonstrate that these items have been considered in the planning of the project. Use N/A (not applicable) for each technique that is not applicable to your project.		
Env-Wt 311.07(b)(2)	For any project that proposes new permanent impacts of more than one acre or that proposes new permanent impacts to a Priority Resource Area (PRA), or both, whether any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs.	☐ Check ☒ N/A
Env-Wt 311.07(b)(3)	Whether alternative designs or techniques, such as different layouts, construction sequencing, or alternative technologies could be used to avoid impacts to jurisdictional areas or their functions and values.	☒ Check ☐ N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(1) Env-Wt 311.10(c)(2)	The results of the functional assessment required by Env-Wt 311.03(b)(10) were used to select the location and design for the proposed project that has the least impact to wetland functions.	☒ Check ☐ N/A
Env-Wt 311.07(b)(4) Env-Wt 311.10(c)(3)	Where impacts to wetland functions are unavoidable, the proposed impacts are limited to the wetlands with the least valuable functions on the site while avoiding and minimizing impacts to the wetlands with the highest and most valuable functions.	☒ Check ☐ N/A
Env-Wt 313.01(c)(1) Env-Wt 313.01(c)(2) Env-Wt 313.03(b)(1)	No practicable alternative would reduce adverse impact on the area and environments under the department's jurisdiction and the project will not cause random or unnecessary destruction of wetlands.	☒ Check ☐ N/A
Env-Wt 313.01(c)(3)	The project would not cause or contribute to the significant degradation of waters of the state or the loss of any PRAs.	☒ Check ☐ N/A
Env-Wt 313.03(b)(3) Env-Wt 904.07(c)(8)	The project maintains hydrologic connectivity between adjacent wetlands or stream systems.	☒ Check ☐ N/A
Env-Wt 311.10 A/M BMPs	Buildings and/or access are positioned away from high function wetlands or surface waters to avoid impact.	☐ Check ☒ N/A
Env-Wt 311.10 A/M BMPs	The project clusters structures to avoid wetland impacts.	☐ Check ☒ N/A
Env-Wt 311.10 A/M BMPs	The placement of roads and utility corridors avoids wetlands and their associated streams.	☒ Check ☐ N/A
A/M BMPs	The width of access roads or driveways is reduced to avoid and minimize impacts. Pullouts are incorporated in the design as needed.	☐ Check ☒ N/A
A/M BMPs	The project proposes bridges or spans instead of roads/driveways/trails with culverts.	☐ Check ☒ N/A

A/M BMPs	The project is designed to minimize the number and size of crossings, and crossings cross wetlands and/or streams at the narrowest point.	☒ Check ☐ N/A
Env-Wt 500 Env-Wt 600 Env-Wt 900	Wetland and stream crossings include features that accommodate aquatic organism and wildlife passage.	☐ Check ☒ N/A
Env-Wt 900	Stream crossings are sized to address hydraulic capacity and geomorphic compatibility.	☐ Check ☒ N/A
A/M BMPs	Disturbed areas are used for crossings wherever practicable, including existing roadways, paths, or trails upgraded with new culverts or bridges.	☐ Check ☒ N/A
SECTION 4 - NON-TIDAL SHORELINE STRUCTURES		
Env-Wt 313.03(c)(1)	The non-tidal shoreline structure has been designed to use the minimum construction surface area over surfaces waters necessary to meet the stated purpose of the structure.	☐ Check ☒ N/A
Env-Wt 313.03(c)(2)	The type of construction proposed for the non-tidal shoreline structure is the least intrusive upon the public trust that will ensure safe navigation and docking on the frontage.	☐ Check ☒ N/A
Env-Wt 313.03(c)(3)	The non-tidal shoreline structure has been designed to avoid and minimize impacts on the ability of abutting owners to use and enjoy their properties.	☐ Check ☒ N/A
Env-Wt 313.03(c)(4)	The non-tidal shoreline structure has been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.	☐ Check ☒ N/A
Env-Wt 313.03(c)(5)	The non-tidal shoreline structure has been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.	☐ Check ☒ N/A
Env-Wt 313.03(c)(6)	The non-tidal shoreline structure has been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.	☐ Check ☒ N/A

NHDES Avoidance and Minimization Narrative

AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: **Wendy Johnson, NHDOT** **TOWN NAME:** **BEDFORD**

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

NO

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

NO

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*

For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

**Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.*

N/A

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization?

Wetland and stream impacts have been minimized and avoided to the maximum extent practicable. During preliminary design, the proposed project was estimated to require approximately 20,861 SF of permanent palustrine wetland impacts and 168 LF of permanent stream channel impacts. Through design changes and avoidance and minimization measures the proposed impacts have been reduced to 10,785 SF of permanent wetland impacts and no permanent stream impacts. Temporary wetland and stream impacts total 4,291 SF and 29 SF / 10 LF respectively. Roadway slopes were steepened to avoid and minimize impacts wherever possible. A reinforced earth slope and a steepened stone fill slope have been incorporated into the design in order to completely avoid wetland and stream impacts in the vicinity of Patten Brook at the southern end of the interchange area. Appropriate soil erosion and sediment control BMPs will be implemented throughout the duration of the project to further minimize water quality impacts. Temporary impacts are associated with construction access and installation of perimeter controls.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

***Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A.*

The existing F.E. Everett Turnpike was originally constructed in the 1950s and 1960s and was sited on its current location at that time. Based on the existing location of the Turnpike infrastructure, opportunities for relocating the proposed widening project are limited. However, as mentioned above, avoidance and minimization efforts have substantially reduced the amount of impacts from the original 20,861 square feet of impacts estimated during the preliminary design phase to the final design phase totalling 10,785 SF of permanent wetland impacts. A functional assessment was completed and used to help minimize and avoid impacts to higher quality wetlands. Wetland impacts are located along the edges of existing wetlands, and the proposed project is not anticipated to result in a substantial loss of wetland functions and values.

Natural Resource Agency Coordination Meeting Minutes

BUREAU OF ENVIRONMENT

CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: February 21, 2018
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban, Sarah Large, Ron Crickard, Steve Johnson, Doug Locker, Tobey Reynolds, Rebecca Martin, Leah Savage, Zachary Schmidt, Trina Russo, Don Lyford, Bill Saffian, Trent Zanes, John Butler, Joe Adams, Marc Laurin, Wendy Johnson, Jon Evans, Kevin Nyhan, Kirk Mudgett, Mark Hemmerlein, and Ron Kleiner
ACOE
Rick Cristoff
EPA
Mark Kern
Federal Highway
Jamie Sikora
NHDES
Gino Infascelli, Lori Sommer, and Tim White
NHF&G
Carol Henderson
NH Natural Heritage Bureau
Amy Lamb
Consultants/Public Participants
Christine Perron, Brian Colburn, Jennifer Zorn, Ed Weingartner, Vicki Chase, Christopher Fourneir, Jed Merrow, Kevin Thatcher, and Bill Ashford

Nashua-Merrimack-Bedford, #13761

This project is anticipated to involve widening three segments of the Everett Turnpike, totaling approximately 8.1 miles, from two lanes to three in each direction. The purpose of this discussion was to: present the overall wetland and waterway impacts; present vernal pool impacts; and present the proposed water quality treatment strategy.

Jed Merrow provided a brief overview of the project. Overall wetland and waterway impacts would include the following:

- 0.83 acres of permanent palustrine wetland impact, mostly fringes of wetlands along the highway
- 0.72 acres (1,433 linear feet) of permanent channel impact
- 0.27 acres (1,098 linear feet) of permanent bank impact
- 0.21 acres (201 linear feet) of temporary channel impact
- 0.002 acres (10 linear feet) of temporary bank impact

No impacts to the Souhegan River are anticipated. Lori Sommer noted that ditches, if replaced, may not require mitigation.

Parts of four vernal pools would be directly impacted. It was noted that vernal pool impacts should be evaluated separately from other wetland impacts, and there are a couple of different ways it can be addressed. There are also different mitigation ratios for vernal pool impacts. Ruth Ladd (Corps) may be the best authority on this subject.

Mark Kern asked about the effect of salt on vernal pools. J. Merrow said they have not yet looked at stormwater runoff effects on vernal pools but it will be looked at.

There was a question about the Pennichuck Water Works water supply intakes with respect to the project. J. Merrow said the main intake is downstream of the Turnpike's Pennichuck Brook crossing.

J. Merrow indicated the proposed Baboosic Brook structure would be a 66-foot bridge which would span 1.2 times the bankfull width and include wildlife shelves on each slope.

J. Merrow discussed water quality treatment. He noted that the DOT would comply with the requirements of the 2017 General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4 General Permit) to the extent practicable. The MS4 General Permit indicates that all new development and redevelopment projects should either treat the Water Quality Volume or remove 80% of total suspended solids and 50% of total phosphorus. The DOT will try to achieve this by constructing extended detention basins wherever feasible along the Turnpike. There are currently 20 basins proposed treating about 71% of runoff, and 5 locations where treatment is not feasible. Design efforts are ongoing.

For chloride, DOT will follow guidelines for waterways that are impaired for chloride, although there are no streams currently designated as impaired for chloride. The MS4 General Permit requires a Salt Reduction Plan and certain BMPs to be followed. DOT is preparing a Salt Reduction Plan and already employs most of the specified BMPs.

J. Merrow noted that there is a commitment to conduct a survey for rare plant species along the corridor, so they can be avoided or mitigated as needed. Amy Lamb requested an aerial-based plan of the project area for rare plant habitat purposes. Regarding rare wildlife species, many of the species may be found in a variety of habitat types along much of the corridor. DOT proposes to implement construction measures to avoid incidental take or impacting these species. Carol Henderson recommended further coordination with Kim Tuttle prior to construction.

BUREAU OF ENVIRONMENT

CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: October 21, 2020
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Sarah Large, Matt Urban, Andrew O'Sullivan, Ron Crickard, Mark Hemmerlein, Jon Evans, Wendy Johnson, Jon Hebert, Dan Prehemo, Wayne Brooks, Marc Laurin, Kirk Mudgett, and Tobey Reynolds
ACOE
Rick Kristoff
EPA
Jean Brochi
NHDES
Lori Sommer, Karl Benedict, and Ann Pelonzi
NH Fish & Game
Carol Henderson
NHB
Amy Lamb
The Nature Conservancy
Pete Steckler
Consultants/ Public Participants
Stephen Hoffmann, Christine Perron, Mike Long, Rob Faulkner, Peter Walker, Hannah Beato,
Rhett Lamb, City of Keene
Donald Lussier, City of Keene
Barbara Skuly, ARLAC

Nashua-Merrimack-Bedford, #13761D
Rob Faulkner provided an overview of the proposed project. The 13761D project is part of the larger 13761 project that includes widening three segments of the existing 2-lane portions of the F.E. Everett Turnpike in Nashua, Merrimack, and Bedford, New Hampshire. The overall project includes adding an additional travel lane in both the northbound and southbound directions and the rehabilitation or replacement of five bridges. The project does not include reconstruction/reconfiguration of the existing interchanges or any modifications to the tolling. The project will help improve mobility, provide congestion relief, and improve safety along the corridor.

The 13761D project encompasses the northern segment located in the Town of Bedford, NH. This segment of the project begins north of the Exit 13 (Bedford toll plaza) interchange and continues north for approximately 1.3 miles through the 1-293/NH Route 101 interchange. The 13761D project proposes to widen the roadway from two to three lanes in each direction through the addition of a northbound and southbound travel lane. Existing travel lanes will receive a mill and overlay pavement treatment. There are minor modifications to the ramps at the 1-293/NH Route 101 interchange required to accommodate the widening. There is no proposed bridge work associated with the 13761D contract. The project also includes drainage improvements that will meet the MS4 requirements to the extent

practical. The project is currently scheduled to advertise in Summer 2021 and associated permit applications will be submitted to NHDES in December 2020.

Stephen Hoffmann provided an overview of the environmental resources that are located in the vicinity of the proposed project. Environmental resources/concerns located in the vicinity of the project include: wetlands, surface waters, stream crossings, water quality/surface water impairments, rare species (state and federally listed), and floodplains. Wetlands are the only resource that are anticipated to be impacted by the 13761D project.

Wetlands were delineated in 2016, 2017, and most recently in 2020. The proposed project will result in approximately 9,651 SF of wetland impacts with no impacts to existing streams (impacts will continue to be refined throughout the final design process). Due to design changes and other minimization efforts, impacts have been reduced from 20,861 SF of wetland impacts and 168 LF of stream impacts estimated during preliminary design. Impacted wetlands include three forested wetlands, an emergent ditch wetland, and a large emergent cattail marsh.

There are three stream crossings located within the project area: Patten Brook, a Tier 3 perennial stream that is carried under the Turnpike via a 72" RCP culvert, and two unnamed Tier 1 intermittent streams located within the interchange area. The proposed project will not replace or extend any of the crossing structures associated with these streams. Therefore, there will not be any stream impacts associated with the proposed project.

Mitigation for the 9,651 SF of permanent impacts will be provided even though the impacts are below the 10,000 SF threshold required for mitigation. It is assumed mitigation will be required since the cumulative impacts from the entire 13761 project, including the southern and middle segments, will exceed the threshold. Based on the most recent available impacts, the in-lieu fee payment would be $54,633.11. Coordination with the Town of Bedford and the Piscataquog Land Conservancy is ongoing to try to identify potential projects that may be suitable for mitigation.

Patten Brook is included on the 2018 303(d) List as impaired for aluminum and the Merrimack River located to the east of the project area is impaired for aluminum and pH. Stormwater treatment will be provided to treat the additional impervious areas associated with the highway widening.

There is a 100-year floodplain and a regulatory floodway associated with Patten Brook, south of the interchange. Impacts to the stream and the associated floodplain/floodway have been avoided by incorporating a retaining wall into the design.

Rare species identified as possibly occurring in the project area include the federally threatened northern long-eared bat. Impacts associated with tree clearing will be determined soon. The project is anticipated to be in compliance with the 4(d) Rule and the need for additional acoustic surveys will be determined as the project progresses.

State listed species identified by NHB include river birch, sessile-fruited arrowhead and Wright's spikesedge as well as brook floater, American eel, bald eagle, peregrine falcon, eastern hognose snake, and spotted turtle. A rare plant survey was conducted in July 2019 and no rare plant species were identified in the project area during the survey. However, river birch was observed during the July 2020 delineation growing along the Merrimack River, outside the proposed project area.

Jon Evans provided clarification on the proposed mitigation approach. Mr. Evans noted that each contract would include separate mitigation for the associated impacts and NHDOT would work through this process with the different towns. The total mitigation for the cumulative impacts associated with the entire project would be reconciled at the end of the entire 13761 project.

Lori Sommer mentioned that she thought the impacts and mitigation sounded reasonable and she would confirm that the mitigation cost was calculated correctly using the latest calculator. Ms. Sommer indicated that she was pleased to see that stream impacts have been avoided.

Karl Benedict said that he was also pleased with the avoidance and minimization efforts and the reduction of impacts. Mr. Benedict asked if any wetland impacts are associated with the stormwater BMP areas. Mr. Hoffmann indicated that the BMP area located at southern end of the project was located adjacent to Wetland #33 and would result in minor impacts along the edge of the forested wetland totaling approximately 346 SF. Mr. Benedict also asked about the overlap between the MS4 and Alteration of Terrain Rules. Mark Hemmerlein confirmed this overlap and indicated that meeting the MS4 regulations would also meet the AOT requirements. Mr. Hemmerlein also confirmed that the project did not require coordination with the NHDES Watershed Management Bureau.

Carol Henderson mentioned that there are nesting peregrine falcons located beneath the NH Route 101 / 1- 293 bridge over the Merrimack River. She noted that this is located outside the project area but to contact Chris Martin during construction to avoid any potential impacts. Ms. Henderson also noted that there is a documented bald eagle nest in the vicinity of the project and that the Bald Eagle Management Plan should be referenced during construction to avoid impacting this species. She would provide this information via email to the project team.

Amy Lamb asked for clarification on the study area that was sent to her for the NHB review that included an area to the north of the interchange. Mr. Hoffmann indicated that the study area that was sent to NHB included an area approximately 1.25 miles north of the limits of the proposed project. This area was included since potential stormwater treatment locations might be needed, however it has since been determined that no impacts are necessary north of the interchange. Ms. Lamb also requested additional October 21, 2020 Natural Resource Agency Coordination Meeting Page 4 information on the river birch that was documented along the Merrimack River during the wetland delineation. Mr. Hoffmann also confirmed that additional rare plant surveys would not be required for the two species identified on the most recent NHB report including sessile-fruited arrowhead and Wright's spikesedge. Ms. Lamb confirmed that these species are associated with the Merrimack River, and since no impacts are proposed in the vicinity of the river further survey efforts for these species would not be required.

The US Army Corps of Engineers did not have any additional comments.

The EPA did not have any additional comments but indicated that they would follow up with Lori Sommer on the final mitigation approach.

Pete Steckler had a question about the location of a mapped stream. Mr. Hoffmann referenced a map of the wetland delineation and pointed out the location of Patten Brook, the unnamed intermittent streams, and Bowman Brook located at the northern limits of the project. Mr. Hoffmann also noted that there was an NHD mapped stream near the southern limits of the project. However, no stream was identified in this location during the wetland delineation. Mr. Hoffmann also noted that Bowman Brook

is located near the northern limits of the project where it ties in and that there is only pavement work at this location.

Christine Perron noted that the project would be discussed at the November resource agency meeting if the Town of Bedford or Piscataquog Land Conservancy provided viable mitigation options to consider. If no viable options are provided, mitigation will be provided via in-lieu fee and there will be no need to return to the November meeting. The application will be provided to NHDOT in November for submittal to NHDES in December.

Mitigation Narrative

Mitigation Narrative

The project requires compensatory mitigation for unavoidable permanent impacts to wetlands associated with the widening of a 1.3-mile segment of the F.E. Everett Turnpike.

The following information is provided to satisfy requirements for permittee responsible mitigation, as outlined in Chapter Env-Wt 800.

Project Overview

The project will result in 10,785 SF of permanent impacts. This project is part of a larger project that will be permitted and constructed under multiple contracts. Therefore, each contract will include mitigation for its associated impacts and total mitigation for the cumulative impacts associated with the entire project will be reconciled with the last 13761 contract.

Wetlands were classified according to Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). The Wetland Functional Assessment was prepared in accordance with the U.S. ACE New England District highway methodology.

The delineation, wetland classification, and functional assessment were overseen by Christine Perron, CWS. This information is available in the enclosed Wetland Delineation Report. Proposed impacts are located in palustrine forested and emergent wetlands. Detailed impacts are provided on the enclosed wetland impact plans and application form.

The Town of Bedford is located in central southern NH in the Merrimack Valley. The 13761D project begins north of the Exit 13 (Bedford toll plaza) interchange and continues north for approximately 1.3 miles through the 1-293/NH Route 101 interchange. The project is located along the northeastern boundary of Bedford, just south and east of the City of Manchester, NH. The Merrimack River is located immediately east. The majority of the study area has been significantly disturbed by the construction of the FE Everett Turnpike, NH Route 101, and commercial and residential development located north of the interchange on the west side of the FEET.

The areas within the ROW and interchange consist of a mix of mowed open grass areas, upland forests, forested wetlands, scrub-shrub wetlands, and emergent wetland areas. Forested uplands are dominated by mixed hardwoods including white pine, red oak, black oak, and quaking aspen. Forested wetlands are typically dominated by red maple while several of the larger palustrine emergent wetlands are dominated by cattail marsh. Invasive plant species are prevalent throughout the upland and wetland areas within the Study Area, including Oriental bittersweet, glossy buckthorn, purple loosestrife, autumn olive, Japanese barberry, and Morrow's honeysuckle. According to the Natural Resources Conservation Service Soil Maps, the majority of the Study Area is underlain by "Suncook loamy fine sand" (Su) and "Udipsamments, nearly level" (UdA).

Most of the habitat along the turnpike has been degraded by disturbance and fragmentation. The project area has a few smaller patches of forest near the southern end but becomes increasingly developed in the vicinity of the I-293 Interchange. The habitat value of this area is limited. The minimal forested habitat

that does exist is Appalachian oak-pine forest. Typical vegetation includes oaks, white pine, hickories, mountain laurel, and sugar maple. Typical wildlife species that utilize this habitat type include wild turkey, whip-poor-will, ruffed grouse, a variety of songbirds, northern goshawk, Cooper's hawk, black bear, bobcat, deer, moose, New England cottontail, several species of bats, eastern hognose snake, black racer, and eastern box turtle. The wetlands in the project area consist of palustrine emergent/scrub-shrub and forested wetlands. These wetland types provide habitat for a variety of species; however, their value as habitat in the project area is limited due to their small size, proximity to the turnpike, and the fragmented landscape. Additional information on rare species and coordination with the USFWS, NHB, and NHF&G is included elsewhere in this application.

Mitigation for Unavoidable Impacts

Impacts to jurisdictional areas have been avoided and minimized to the extent practicable while still accomplishing the purpose and need of the project. During preliminary design, it was estimated that the project would result in 20,861 SF of wetland impacts and 168 LF of stream impacts. Due to design changes and other avoidance and minimization measures, the proposed impacts have been reduced to 10,785 SF of wetland impacts with no impacts to existing streams.

The Town of Bedford and the Piscataquog Land Conservancy (PLC) were contacted for input on potential mitigation recommendations (see attached emails). The Piscataquog Land Conservancy did not respond to the request for input. The Town of Bedford responded with one potential mitigation opportunity (correspondence is attached) – the acquisition of a 0.85-mile segment of the old B&M RR off the west side of Jenkins Road to provide a permanent, formal trail through existing conservation lands. The Town of Bedford currently owns 50 acres of conservation land along the RR and the Town of Merrimack owns 23 acres. The old RR bed on the east side of Jenkins Road was purchased by a developer years ago and a trail easement was placed on that portion for the Town. The 0.85-mile rail segment passes through one of the town's larger high value wetlands (McQuade Brook Wetland #10), and McQuade Brook and its associated floodplain run parallel to the RR.

Upon further review, it was determined that this narrow, linear parcel does not meet the minimum compensatory mitigation ratio required for an aquatic resource buffer and overall costs of acquisition are expected to exceed the total required in-lieu fee. Therefore, NHDOT has decided not to pursue this as parcel as mitigation. The preservation of an aquatic resource buffer located elsewhere was not considered. As a linear transportation project, this mitigation option must be accomplished through the purchase and preservation of land not currently within the transportation network. Areas in the immediate vicinity of the project consist of developed land or the right-of-way of the turnpike and Route 101.

No suitable restoration or enhancement opportunities exist in the project area that are in line with the proposed scope of work. Wetland creation opportunities were not considered practicable due to the costs associated with long-term monitoring and maintenance.

For these reasons, payment to the Aquatic Resource Mitigation (ARM) Fund is proposed. Based on the NHDES ARM Fund 2020 Wetland Payment Calculator, the ARM Fund payment for the 10,785 SF of proposed impacts in Bedford will be $61,052.55

NHDES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION
*****INSERT AMOUNTS IN YELLOW CELLS*****

1	**Convert square feet of impact to acres:**		
INSERT SQ FT OF IMPACT	Square feet of impact =	10785.00	
		43560.00	
	Acres of impact =	0.2476	
2	**Determine acreage of wetland construction:**		
	Forested wetlands:	0.3714	
	Tidal wetlands:	0.7428	
	All other areas:	0.3714	
3	**Wetland construction cost:**		
	Forested wetlands:	$35,903.65	
	Tidal Wetlands:	$71,807.30	
	All other areas:	$35,903.65	
4	**Land acquisition cost (See land value table):**		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	40318	
	Forested wetlands:	$14,973.47	
	Tidal wetlands:	$29,946.94	
	All other areas:	$14,973.47	
5	**Construction + land costs:**		
	Forested wetland:	$50,877.12	
	Tidal wetlands:	$101,754.25	
	All other areas:	$50,877.12	
6	**NHDES Administrative cost:**		
	Forested wetlands:	$10,175.42	
	Tidal wetlands:	$20,350.85	
	All other areas:	$10,175.42	
****************	**TOTAL ARM PAYMENT*************		
	Forested wetlands:	$61,052.55	
	Tidal wetlands:	$122,105.10	
	All other areas:	$61,052.55	

Christine J. Perron

From: Christine J. Perron
Sent: Friday, September 25, 2020 10:51 AM
To: 'rhebert@bedfordnh.org'
Subject: NHDOT Project - F.E. Everett Turnpike 13761 - input requested

Good morning Becky,

As you are likely aware, the NHDOT is proposing to reconstruct and widen three segments of the F.E. Everett Turnpike. The final design, permitting, and construction of each segment will be completed under different contracts. Final design is now underway for the northernmost segment, located between the Bedford Toll Plaza (north of Exit 13) and the I-293/NH Route 101 interchange (http://www.everettturnpikewidening.com/documents/Figures/Feet%20Figures/Northern%20Segment-D.pdf).

Although impacts to wetlands and streams will be minimized as much as possible, it is anticipated that this project will result in impacts that will require mitigation. Impacts along the northern segment are expected to total approximately ½ an acre, which would equate to compensatory mitigation in the range of $100,000.

The NHDOT is seeking input on preferred/priority mitigation efforts that the project team can evaluate and consider undertaking once the final level of required mitigation has been determined. Potential mitigation efforts include, but are not limited to, land preservation and habitat restoration located within the Merrimack River Watershed (https://www4.des.state.nh.us/arm-fund/wp-content/uploads/2019/03/service-areas.jpg). If the Town of Bedford has mitigation efforts that you would like the NHDOT to consider, please provide input by the end of October.

Feel free to get in touch if you have any questions.
Thank you,
Christine

Christine Perron, CWS
Project Manager • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 1280
www.mjinc.com

Christine J. Perron

From: Christine J. Perron
Sent: Friday, September 25, 2020 10:53 AM
To: 'plc@plcnh.org'
Subject: NHDOT Project - F.E. Everett Turnpike 13761 - input requested

Good morning,
The NHDOT is proposing to reconstruct and widen three segments of the F.E. Everett Turnpike. The final design, permitting, and construction of each segment will be completed under different contracts. Final design is now underway for the northernmost segment, located between the Bedford Toll Plaza (north of Exit 13) and the I-293/NH Route 101 interchange (http://www.everettturnpikewidening.com/documents/Figures/Feet%20Figures/Northern%20Segment-D.pdf).
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The NHDOT is seeking input on preferred/priority mitigation efforts that the project team can evaluate and consider undertaking once the final level of required mitigation has been determined. Potential mitigation efforts include, but are not limited to, land preservation and habitat restoration located within the Merrimack River Watershed (https://www4.des.state.nh.us/arm-fund/wp-content/uploads/2019/03/service-areas.jpg). If the Piscataquog Land Conservancy has mitigation efforts that you would like the NHDOT to consider, please provide input by the end of October. Feel free to get in touch if you have any questions.
Thank you,
Christine

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OFFICE: 603-225-2978 ext. 1280
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Christine J. Perron

From: Karin Elmer <kelmer@bedfordnh.org>
Sent: Friday, October 9, 2020 11:54 AM
To: Christine J. Perron
Cc: Rebecca W. Hebert
Subject: Mitigation land
Attachments: 20201009113717528.pdf

Hello again,

Attached is the information that we spoke about this morning. It is an old B&M RR bed off the west side of Jenkins Rd. I attached a tax map of the area showing ownership of different lots in the area. The Town of Bedford currently owns 50 acres. The Town of Merrimack owns 23 acres. Owning this parcel will allow the Town to fully open up this area for conservation and trails. The old RR bed on the east side of Jenkins Rd. was abandoned and purchased by a developer many years and a trail easement was placed on that portion for the Town. In 2005 the Town did a Prime Wetlands study. This area is known as wetland #10. The Town did not end up adopting Prime Wetlands but the study was very helpful for the Town. I included a small portion of the study that includes this area, known as the McQuade Brook Wetland #10. McQuade Brook runs parallel with the RR bed within the greater wetland. In 2009 the Town completed an Open Space Plan. This area is again listed as an important area for the Town. Lastly, I have included the cover letter for the appraisal that was just completed this week.

If there is any other information that you think might be helpful, please just let me know.

Regards,

Karin Elmer
Planner 1
Town of Bedford, NH
24 No. Amherst Rd
Bedford, NH 03110
(603)792-1320
www.bedfordnh.org

Nov. 2018

Town of Bedford (50 acres)
B & M Railroad (10 acres)
Riley ~~Farm~~ (5 acres)
Town of Merrimack (23 acres) Watkins Forest
Dumas (50 acres)

FREMEAU APPRAISAL, INC.

11 Stark Street • Manchester, New Hampshire 03101
Telephone (603) 622-8826
www.fremeau.com

October 6, 2020

Karin Elmer
Planner 1
Town of Bedford, NH
24 No. Amherst Road
Bedford, NH 03110

Re: Boston & Maine Corporation
Abandoned Rail Bed Off Jenkins Road
Bedford, New Hampshire
Tax Map 39, Lot 27
Fremeau File No: 8.483

Dear Ms. Elmer:

We have prepared the attached Restricted Appraisal Report for the purpose of estimating the "As Is" value of the above referenced property as of September 25, 2020, the date the property was formally inspected by B. Alec Jones. Joseph G. Fremeau did not inspect the property. The intended use of this appraisal is to assist the Bedford Conservation Commission in its evaluation of this asset in conjunction with its possible acquisition of the property for conservation.

The accompanying report is intended to comply with the reporting requirements set forth under Standards Rule 2 of the Uniform Standards of Professional Appraisal Practice (USPAP), 2020-2021 Edition. *Use of this report is restricted to you and the Bedford Conservation Commission, and this is because the rationale for how we arrived at the opinions and conclusions set forth in the report may not be understood properly without additional information in the appraiser's workfile.*

The subject of this report consists of a remnant that was once part of an 18-mile rail corridor that was abandoned (and rails, etc. removed) more than 90 years ago. Since then much of the former corridor has been sold for non-corridor type uses. Based on a review of the town's Property Record Card (PRC) the subject strip of land contains 10.23± acres. Based on your input the strip measures about 100' wide by 4,500' long, which approximates 0.85 mile. A walking trail of varying width extends through much if not all of the strip. The property consists of a mix of woodlands as well as open areas (exhibiting scrub growth) extending several feet above ponded wetlands bordering each side of the strip, and portions of the strip may fall within the ponded wetlands. All of the subject strip appears to fall within a flood plain.

This appraisal includes the following extraordinary assumptions:

1. That title and/or rights to the property are transferable and/or assignable.
2. That title and/or rights may be transferred without any warranties or covenants of title whatsoever (e.g. see Release Deed at Book 5963, Page 1109 from Boston & Maine Corp to Town of Bedford for former Lot 39-15).
3. That the subject property includes no easements, no license/lease agreements, no restrictions, and no encumbrances of any kind.
4. That any transfer of title is not just for surface rights but includes the rights to all subsurface natural resources and all applicable air rights, if any.

5. That the subject strip of land does not meet the definition of a "corridor" (i.e. *a strip of land used for transportation or transmission purposes"* – The Dictionary of Real Estate Appraisal – 6th Edition) because it no longer performs the defined function of creating economic or social value by connecting the end points; and since much of the former corridor appears to have long since been abandoned and sold for non-corridor type uses.

As an uneconomic remnant, the property has no highest and best use. The best possible use of the subject property is likely for assemblage with an abutter for use as a walking trail bordering adjacent conservation land. The subject is judged to have limited marketability except to an abutter for recreational use (likely limited to hiking). As such, this appraisal does not report market value as that term is defined herein but the "As Is" value to an abutter.

This appraisal assumes that no hazardous waste or environmental problems associated with hazardous waste are present on the subject property, and no environmental site assessment was provided for this assignment. Furthermore, it is assumed that no hazardous waste or associated problems exist on abutting properties that would impact on the subject property.

The Sales Comparison Approach has been used to value the subject strip of land because this is the most typical method of valuing vacant land. The Cost Approach was not used because there are no improvements, and the Income Approach was not used because unimproved residential zoned lots like the subject are not typically leased. A typical buyer of the subject property would not rely on either the Cost or Income Approaches to value.

Attached is the Restricted Appraisal Report that describes our investigation and limited analyses, together with the Certification, Assumptions and Limiting Conditions, and Extraordinary Assumptions. Based on this, it is our opinion that the "As Is" value of the Boston & Maine Corporation strip of land located off the southwest side of Jenkins Road in Bedford, New Hampshire (Tax Map 39, Lot 27), as of September 25, 2020, is as follows:

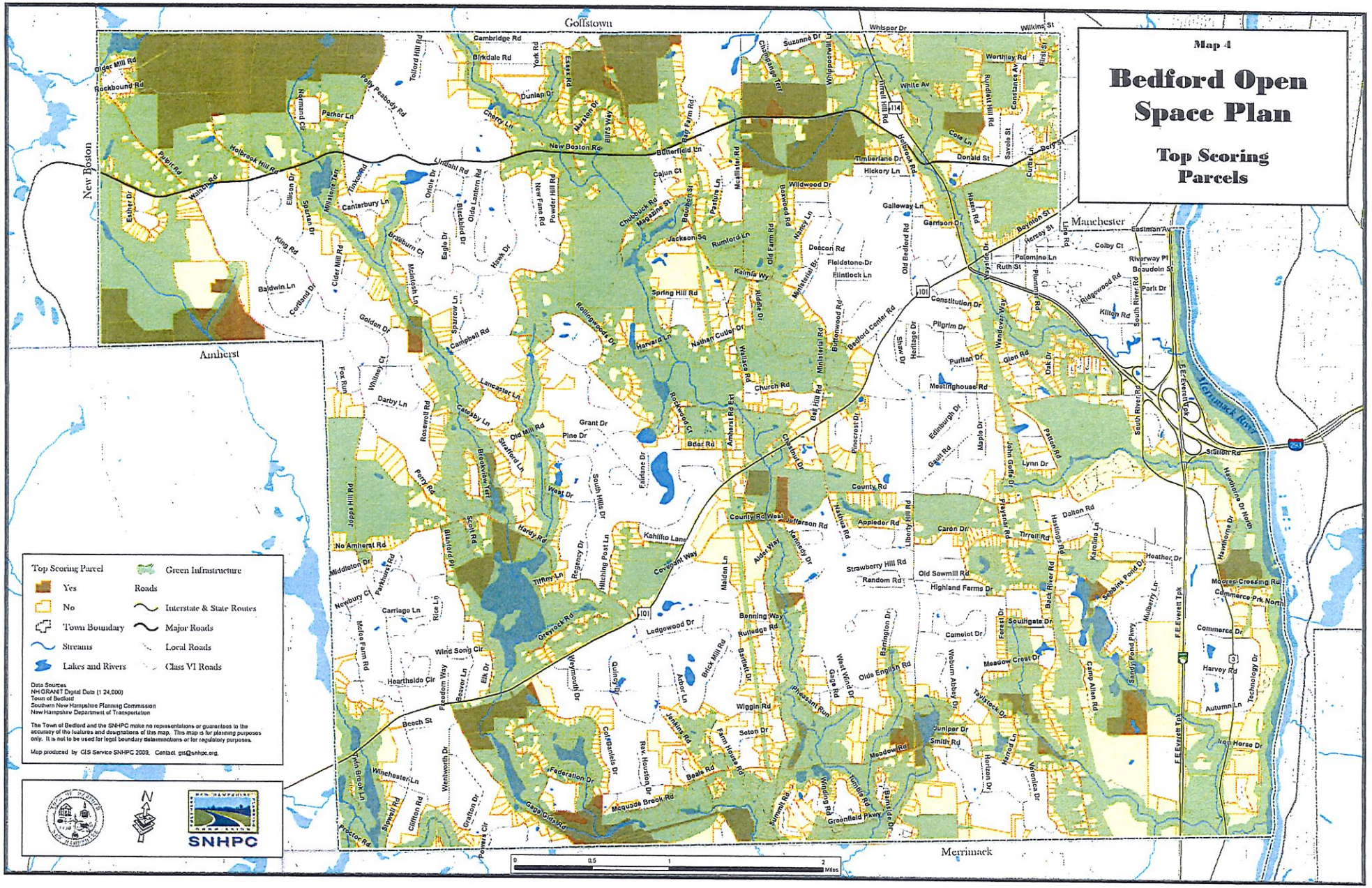
"As Is" Value..... $40,000

Respectfully submitted,

FREMEAU APPRAISAL, INC.

B. Alec Jones
NHCG-665

Joseph G. Fremeau, MAI
NHCG-89
President


Map 4
Bedford Open Space Plan
Top Scoring Parcels
Goffstown
New Boston
Amherst
Manchester
Merrimack
Top Scoring Parcel
Yes
No
Town Boundary
Streams
Lakes and Rivers
Green Infrastructure
Roads
Interstate & State Routes
Major Roads
Local Roads
Class VI Roads
Data Sources
NH GRANIT Digital Data (1:24,000)
Town of Bedford
Southern New Hampshire Planning Commission
New Hampshire Department of Transportation
The Town of Bedford and the SNHPC make no representations or guarantees to the accuracy of the features and designations of this map. This map is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.
Map produced by GIS Service SNHPC 2009. Contact: gis@snhpc.org.
SNHPC
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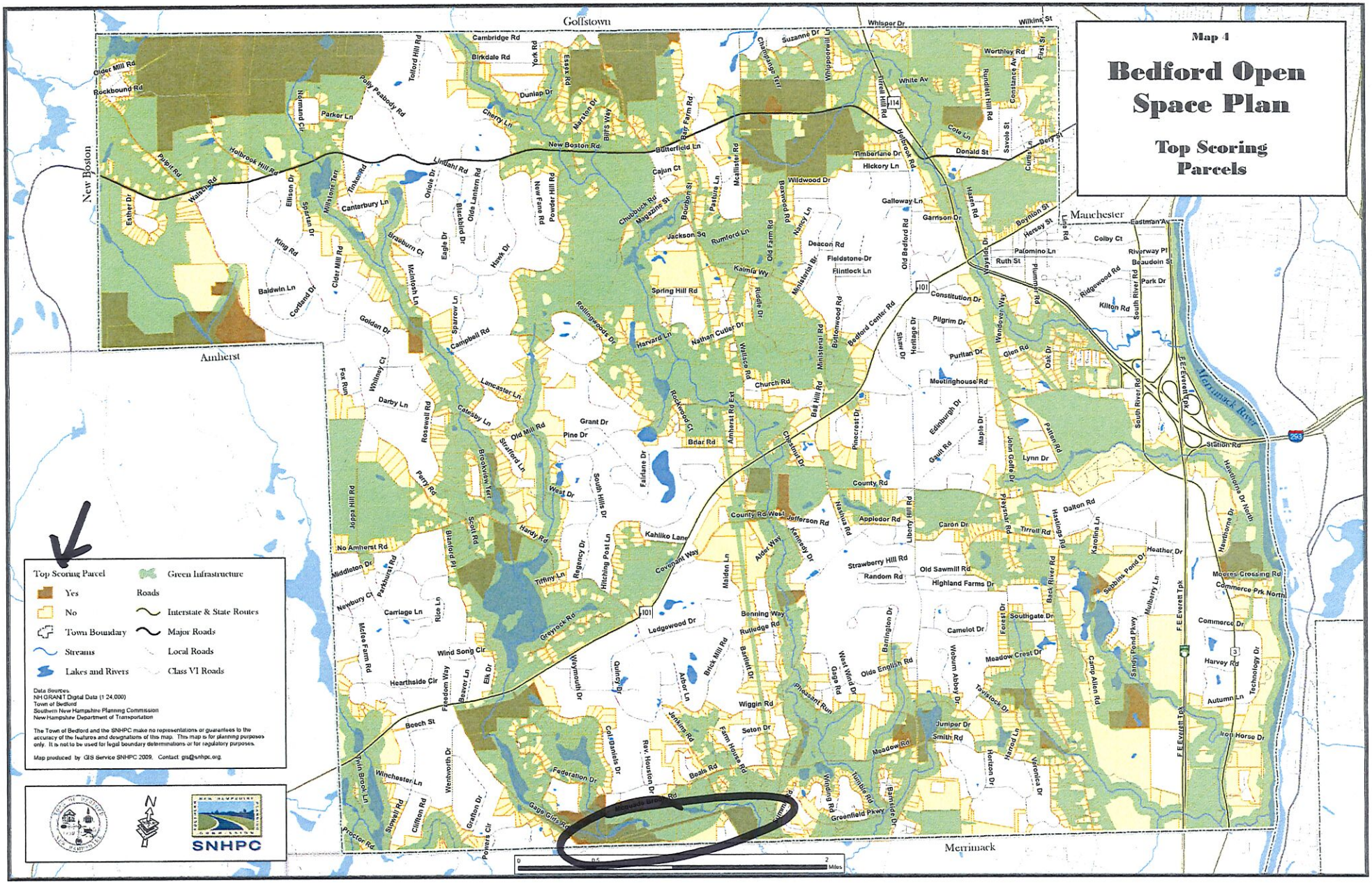
Map 4
Bedford Open Space Plan
Top Scoring Parcels
Goffstown
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Merrimack
Manchester
Top Scoring Parcel
Yes
No
Town Boundary
Streams
Lakes and Rivers
Green Infrastructure
Roads
Interstate & State Routes
Major Roads
Local Roads
Class VI Roads
Data Sources:
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Town of Bedford
Southern New Hampshire Planning Commission
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Map produced by GIS Service SNHPC 2009. Contact gis@snhpc.org.
SNHPC
N
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2
Miles

Technical Report

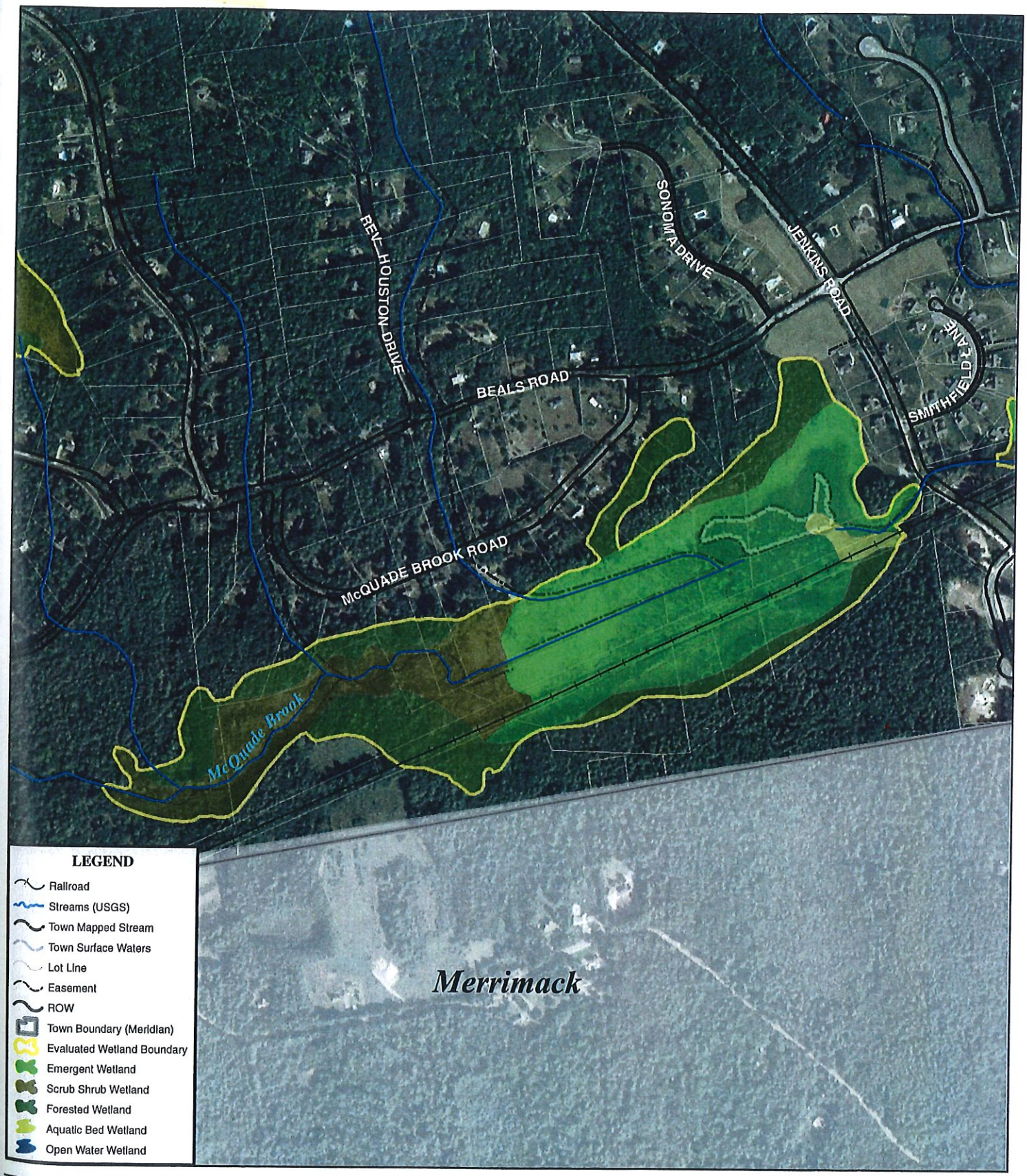
Prime Wetlands Study

Bedford
New Hampshire

Prepared for **Bedford Conservation Commission**
Bedford, New Hampshire

Prepared by ***VHB*/Vanasse Hangen Brustlin, Inc.**
Bedford, New Hampshire

December 2005



Vanasse Hangen Brustlin, Inc.

Figure 4-9

McQuade Brook Wetlands (McQuade Brk. Rd)
Town of Bedford, New Hampshire

Table 4-8
McQuade Brook Tributary Wetland (26.9 acres)

Wetland Functional Values	FVI	WVU
1. Ecological Integrity	0.77	20.6
2. Wetland Wildlife Habitat	0.46	12.3
3. Finfish Habitat: Part A - Rivers and Streams	0.00	0.0
3. Finfish Habitat: Part B - Ponds and Lakes	0.00	0.0
4. Educational Potential	0.30	0.0
5. Visual Aesthetic Quality	0.58	1.7
6. Water-based Recreation	0.00	0.0
7. Flood Control Potential	0.80	21.5
8. Ground Water Use Potential	0.88	23.5
9. Sediment Trapping	0.47	12.6
10. Nutrient Attenuation	0.47	14.0
11. Shoreline Anchoring and Dissipation of Erosive Forces	0.70	0.0
12. Urban Quality of Life	NA	NA
13. Historical Site Potential	0.28	7.4
14. Noteworthiness	0.29	7.7

4.9 McQuade Brook Wetland at McQuade Brook Road (#10)

McQuade Brook near the Merrimack town line flows through an east-west trending level valley bottom approximately 2500 feet long by 800 feet wide (see **Figure 4-9**). The associated marshes with deeper areas of rooted aquatic bed and drier areas along the periphery of shrub and forested wetland create one of the most extensive and diverse wetlands in Bedford. The NRCS Soil Survey of Hillsborough County maps the wetland soils as Chocorua mucky peat, a very poorly drained organic soil to a depth of 22 inches in very wet depressions indicating the ancient origin of the wetlands. The surrounding upland soils are mapped Birmingham, Deerfield, Saugatuck and Leicester-Walpole, glacio-lacustrine and fluvial terrace derived soils on a relatively low lying and rolling landscape of good agricultural potential. There are small areas of Canton, a till-derived soil on hills. Most of the surrounding land that was once agricultural is now residential. The wetland has several old drainage ditches indicating that it was once used for pasture or hay. An abandoned railroad bed runs east-west along the southern portion of the wetland. McQuade Brook has been channelized along the railroad bed. The natural channel of McQuade Brook is from 10 to 20 feet wide and 1 to 2 feet deep slowly flowing over a sandy substrate. Beaver are active throughout the wetland. They presently have a dam across the outlet about 100 feet wide located about 200 feet before the outlet enters culverts

under Jenkins Road. The dam raises the water level in the marsh an additional 1 to 2 feet.

A pine grove at Jenkins Road and the railroad bed afford an excellent opportunity for parking and walking to view the variety of wetland and upland plant communities and associated wildlife. The dominant plants from deeper water to emergent marsh are yellow water lily, pond weeds, blue joint grass, spike rush, soft rush and tussock sedge. Common plant species on rises and in the bordering shrub-forested wetland are buttonbush, sweet gale, meadow sweet, high bush blueberry, winterberry holly, alder, red maple and American elm. There is purple loosestrife along the edges of this wetland but it doesn't appear to have taken hold in the interior of the marsh. The surrounding upland is mostly mature white pine, red and white oak, and hemlock. Hayfields are located at the western end of the railroad bed. This diversity of plant communities provides excellent habitat for many species of wildlife and the railroad bed affords excellent access for viewing. The dead trees adjacent to the marsh provide excellent habitat for wood ducks. There were no wood duck boxes observed during the field inspection; with easy access, this would be a good wetland for their installation.

Other principal functions of this wetland include: flood storage due to its large, level expanse especially during dry periods when there is extra storage capacity; nutrient removal from enriched runoff of nearby residences and roads; and finfish habitat with the overhanging trees and shrubs at the marsh edge and along the brook providing shade to moderate water temperatures and provide cover.

This is truly one of the most remarkable wetlands in Bedford. The incredible vastness of the marsh that is easily viewable from the abandoned railroad bed provides an almost unmatched visual experience in Bedford. Several portions of this wetland are already under protection, but additional acquisitions are strongly recommended.

Table 4-9
McQuade Brook Wetland at McQuade Brook Road (70.6 acres)

Wetland Functional Value	FVI	WVU
1. Ecological Integrity	0.92	64.7
2. Wetland Wildlife Habitat	0.85	60.1
3. Finfish Habitat: Part A - Rivers and Streams	0.69	1.8
3. Finfish Habitat: Part B - Ponds and Lakes	0.53	0.4
4. Educational Potential	0.76	53.1
5. Visual Aesthetic Quality	0.94	46.8
6. Water-based Recreation	0.74	51.5
7. Flood Control Potential	1.00	70.6

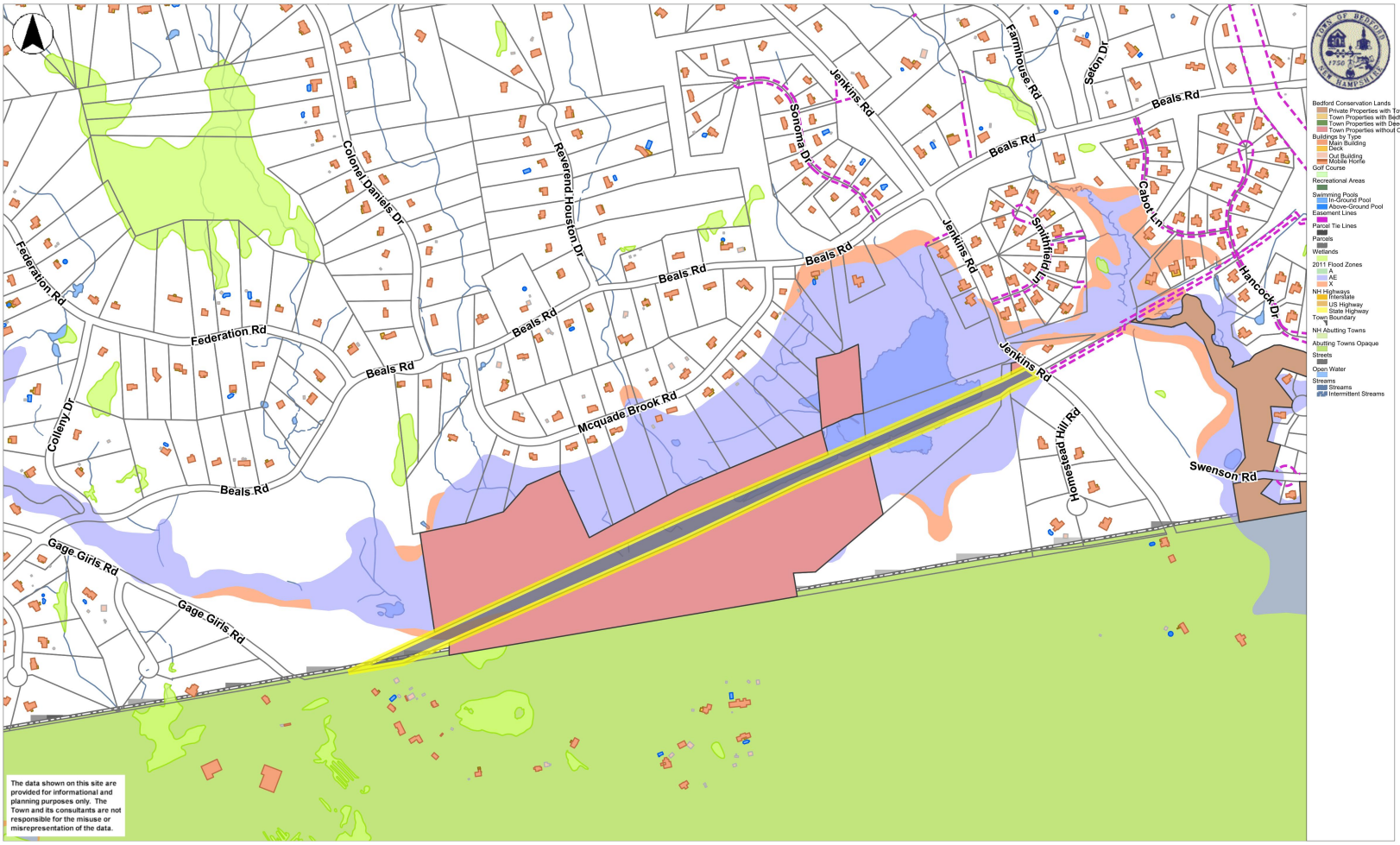
Table 4-9 (Continued)

Wetland Functional Value	FVI	WVU
8. Ground Water Use Potential	1.00	70.6
9. Sediment Trapping	0.65	45.9
10. Nutrient Attenuation	0.60	45.9
11. Shoreline Anchoring and Dissipation of Erosive Forces	0.83	2.2
12. Urban Quality of Life	NA	NA
13. Historical Site Potential	0.28	0.9
14. Noteworthiness	0.29	20.2

4.10 Lower McQuade Brook Wetland (#11)

McQuade Brook after exiting Wetland 10 through culverts under Jenkins Road is a steeper gradient stream (10-15 feet wide, 6 to 12 inches deep) flowing over a mostly gravely-cobblely substrate in a narrow wetland valley (300 feet wide) through a more hilly landscape of residential developments and a few remaining farm fields (see **Figure 4-10**). The NRCS Soil Survey of Hillsborough County maps the wetland soils as Saco very poorly drained silt loam. The surrounding upland soils are mapped Birmingham, Belgrade, Deerfield and Hinkley, glacio-lacustrine, fluvial terrace and outwash derived soils on a rolling landscape of good agricultural and rural residential development potential. Wet seeps and intermittent drainage swales between fields and residences connect to the main forested-shrub wetland along McQuade Brook. The wetland types are primarily shrub and forested, except in the hayfield swales, which are wet meadows, and on the lower gradient portions of the stream, where beaver dams have created areas of emergent marsh.

Much of the wet meadow is periodically mowed or would otherwise succeed to woody species. Common plants include reed canary grass, blue joint grass, red top grass, rough leaf golden rod and several sedges and rushes. Shrubs include silky dogwood, meadow sweet, and arrow wood. Red maple, alder, American elm and white pine are common trees. This wetland because of its location functions mostly as a buffer for the stream. It provides both finfish habitat, with a lot of overhanging bank vegetation, and water quality treatment of runoff from neighboring lawns and streets.



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Wetland Delineation Report

NHDOT 13761D – F.E. EVERETT TURNPIKE WIDENING NORTHERN SEGMENT

WETLAND DELINEATION REPORT

BEDFORD, NH

NOVEMBER 2020

New Hampshire DOT Department of Transportation

7 Hazen Drive
Concord, NH 03302

McFarland Johnson

53 Regional Drive
Concord, NH 03301

NHDOT 13761D - F.E. EVERETT TURNPIKE NORTH WIDENING PROJECT

WETLAND DELINEATION REPORT

BEDFORD, NEW HAMPSHIRE

NOVEMBER 2020

Contents

Attachments:

Figure 1 – Location Map

Figure 2 – Wetland and Surface Water Delineation

Photo Log

Wetland Data Forms

Wetland Functions & Values Forms for Impacted Wetlands

Previously Delineated Wetlands (2016/2017) Summary Table

INTRODUCTION

McFarland-Johnson, Inc. (MJ) completed a wetland delineation on behalf of the New Hampshire (NH) Department of Transportation (NHDOT) for a proposed highway widening project (NHDOT Project # 13761D) located in the Town of Bedford, NH. Stephen Hoffmann of MJ was the lead wetland delineator assisted by Connor Golden also with MJ. Oversight on all matters was provided by Christine Perron of MJ, NH Certified Wetland Scientist No. 294.

The proposed project segment is part of the larger NHDOT Nashua-Merrimack-Bedford 13761 F.E. Everett Turnpike (FEET) widening project. A wetland delineation was previously completed by MJ in 2016 and 2017 for the original Project Study Area which included the mainline and portions of the exit ramps at the I-293 / NH Route 101 Interchange. The additional follow-up delineation completed in June and July 2020 included additional areas that were located outside the original 2016/2017 Study Area primarily within the interchange area, and a segment approximately 0.8 mile north of the interchange. The following report describes the methods and results of the wetland delineation completed in June and July 2020. In addition, this report also summarizes invasive species and rare plant species documented within the Study Area during the 2020 wetland delineation.

A summary of wetlands delineated in 2016/2017 is attached.

METHODOLOGY

The wetland delineation was completed during two separate field visits on June 22-26, 2020 and July 28-30, 2020.

The wetland delineation was completed in accordance with the 1987 *US Army Corps of Engineers Wetlands Delineation Manual* and the 2012 *Regional Supplement to the Corps Wetland Delineation Manual: Northcentral and Northeast Region*. Additional references included *Field Indicators of Hydric Soils in the United States* (Version 8.2, 2018), the *National List of Plant Species that Occur in Wetlands*, and *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Ordinary high water (OHW) and top of bank (TOB) were delineated for surface waters based on hydrologic, topographic, vegetative, and other physical indicators.

The wetland boundaries and the OHW and TOB of surface waters were demarcated in the field using pink flagging, labeled "*Wetland Delineation"*, tied to vegetation, and labeled with a unique identifier and sequentially numbered. Wetlands were designated with a "W" and streams with

an "S" and assigned a number (e.g., W-40 or S-10). The numbering system for wetlands and streams was kept consistent with the previous wetland delineations. New features were assigned a number in the order they were encountered.

The flag locations of jurisdictional features were located using a Trimble Geo 7X GPS unit with sub-meter accuracy. Delineated feature GPS data were post-processed to improve accuracy using the differential correction tool in Pathfinder GPS Office.

Data on wetland vegetation, soils, hydrology, and other characteristics were collected. Photographs of wetlands, streams, and existing crossing structures were taken and are included with this report. MJ documented the delineation with Army Corps Wetland Determination Data Forms at representative wetland and upland locations for each wetland. Wetland-Upland data forms are included with this report.

Invasive species listed as prohibited by the NH Department of Agriculture, Food and Markets were identified during these field reviews and their approximate locations and extents were also collected with the GPS. Larger populations were sketched on field maps and later digitized in ArcMap.

The NH Natural Heritage Bureau (NHB) identified three species of state-threatened vascular plants as having the potential to occur within the project area. The species include: bird-foot violet (*Viola pedata*), clasping milkweed (*Asclepias amplexicaulis*) and river birch (*Betula nigra*). A rare plant survey for the three species was conducted by MJ in July 2019. The rare plant Study Area was composed of the original 2016/2017 wetland delineation Study Area and the I-293 / NH 101 interchange infield areas. The additional 2020 Study Area located within the ROW north of the interchange and the area in the vicinity of Patten Brook were not included in the 2019 rare plant survey Study Area; however, any rare plants observed during the delineation were documented.

STUDY AREA

The entire Study Area is located in Bedford, Hillsborough County, NH, and includes: the infield areas located within the I-293 and the NH Route 101 interchange; an area located south of the I-293 / NH 101 interchange on the west of the FEET in the vicinity of Patten Brook; and an additional 0.8 miles of land located within the right-of-way (ROW) north of the previous Study Area to Eastman Ave near the Manchester City Line. The existing ROW north of the I-293/NH

101 interchange is assumed to extend approximately 100 feet west of the edge of existing pavement, and to the Merrimack River to the east. The overall Study Area is shown on **Figure 1.**

LANDSCAPE SETTING

The Town of Bedford is located in central southern NH in the Merrimack Valley. The Study Area is located along the northeastern boundary of Bedford, just south and east of the City of Manchester, NH. The Merrimack River is located immediately east of the Study Area. The majority of the study area has been significantly disturbed by the construction of the FEET, NH Route 101, and commercial and residential development located north of the interchange on the west side of the FEET.

According to the Natural Resources Conservation Service (NRCS) Soil Maps, the majority of the project Study Area is underlain by "Suncook loamy fine sand" (Su) and "Udipsamments, nearly level" (UdA).

The areas within the ROW and interchange consist of a mix of mowed open grass areas, upland forests, forested wetlands, scrub-shrub wetlands, and emergent wetland areas. Forested uplands are dominated by mixed hardwoods including white pine (*Pinus strobus*), red oak (*Quercus rubra*), black oak (*Quercus velutina*), and quaking aspen (*Populus tremuloides*). Forested wetlands are typically dominated by red maple (*Acer rubrum*) while several of the larger palustrine emergent wetlands are dominated by cattail (*Typha sp.*) marsh. Invasive plant species are prevalent throughout the upland and wetland areas within the Study Area.

Common invasive species included Oriental bittersweet (*Celastrus orbiculatus*), glossy buckthorn (*Frangula alnus*), purple loosestrife (*Lythrum salicaria*), autumn olive (*Elaeagnus umbellata*), Japanese barberry (*Berberis thunbergii*), and Morrow's honeysuckle (*Lonicera morrowii*). Invasive species populations located throughout the Study Area are discussed in greater detail in the Invasive Species section of this report.

WEATHER CONDITIONS

The wetland delineation was completed during two separate site visits in June and July 2020. Specific weather conditions for each visit are discussed below.

JUNE 22-26, 2020

The first site visit was conducted in June 2020. The weather was mostly sunny with temperatures in the mid-80s to 90s. There was no significant rainfall prior to or during the delineation, except for a brief but heavy afternoon downpour on Wednesday June 24th. The Spring of 2020 had been relatively dry, with below average precipitation amounts. The National Oceanic and Atmospheric Administration (NOAA) Summary of Monthly Normals from 1981-2010 for the Manchester

Airport Station were referenced. Average total precipitation for the months of April, May, and June at the Manchester Airport Station are 3.86", 4.05", and 3.79" respectively. During 2020, the total precipitation for April, May, and June (1-26) were 4.52", 1.58", and 0.69" respectively.

JULY 28-30, 2020

The second site visit was completed over a period of 3 days at the end of July. The weather was mostly sunny with temperatures in the mid-80s to low-90s. There was no significant rainfall immediately before or during the delineation. On July 22, 2020, the NOAA Station at the Manchester Airport recorded a rainfall event of 0.94". The total rainfall amount for the month of July 2020 was 2.82", while the average total precipitation for the month of July is 3.80".

DELINEATED WETLANDS & WATERBODIES

The following section provides a description of the wetlands and surface waters that were delineated in June/July 2020. Several of the wetlands and streams were extensions of previously delineated features from the 2016/2017 delineation while others were located entirely within the new Study Area. Features in this report are organized roughly from south to north. The locations of delineated wetlands are included on **Figures 2.1-2.5**. Photos of each wetland/upland data point and the associated data forms are attached to the end of the report. Wetland Functions and Values were assessed using the USACE's Highway Methodology. The overall wetland delineation Study Area was much larger than the actual footprint of the 13761D project. Therefore, a description of the Wetland Functions and Values is provided only for wetland areas that are in close proximity to and anticipated to be impacted by the proposed 13761D project.

W-50

Type: Palustrine Wetland

Classification: PSS1E

Associated Features: S-10 (Perennial Stream, *Patten Brook*)

Photo Log Page #: 9

Description:

W-50 is classified as a palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated wetland (PSS1E). The wetland area is located adjacent to Patten Brook (S-10)

on both sides, within the floodplain of the perennial stream. W-50 is located on the west side of the Turnpike, approximately 125' from the existing edge of pavement of the F.E. Everett Turnpike SB on ramp. Dominant vegetation in W-50 included red maple, speckled alder (*Alnus incana*), Bebb's willow (*Salix bebbiana*), deer-tongue grass (*Dichanthelium clandestinum*), rough goldenrod (*Solidago rugosa*), and New England Aster (*Symphyotrichum novae-angliae*). The wetland and stream both continue outside the Study Area to the west.

S-10

Type: Perennial Stream

Name: Patten Brook

Classification: R3RB1/UB1H

Associated Features: W-50 (PSS1E); W-38 (PFO1E)

Photo Log Page #: 22

Description:

S-10 includes the portion of Patten Brook that was delineated in the Study Area. Patten Brook is a perennial stream and tributary of the Merrimack River. At the location of the Turnpike crossing Patten Brook is a 3rd order stream has a total watershed area of approximately 1,830 acres. The majority of the stream located within the Study Area was delineated in 2016/2017. The delineation was extended in 2020 on the upstream (west) side of the Turnpike. An existing 72" RCP carries the stream underneath the Turnpike. Upstream from the inlet the substrate of the channel is primarily bedrock. There is an approximately 4'-5' vertical drop immediately upstream from the inlet. Patten Brook has a forested riparian area located in the floodplain. W-50 (upstream side) and W-38 (downstream side) are palustrine forested and scrub-shrub wetlands associated with Patten Brook.

W-40

Type: Palustrine Wetland

Classification: PUBH/EM/FO1F

Associated Features: None

Photo Log Page #: 1

Description:

W-40 is a relatively large palustrine, unconsolidated bottom, permanently flooded wetland (PUBH) located within the cloverleaf formed by the F.E. Everett Turnpike NB onramp. The wetland contains a mosaic of different wetland classes and cover types including: large areas of open water; palustrine emergent cattail marsh throughout portions of the wetland and along the wetland margins located at the toe-of-slope of the roadway embankments; and pockets of forested wetland areas in the middle of the wetland. There are numerous standing dead trees or snags interspersed throughout the wetland area. Dominant vegetation included broad-leaf cattail (*Typha latifolia*), white waterlily (*Nymphaea odorata*), and red maple. Purple loosestrife, a NHDOT Type II invasive species, was also documented along the wetland margin of W-40.

W-51

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: W-54 (PEM1E, hydrologically connected via an 18" RCP)

Photo Log Page #: 10

Description:

W-51 is a small palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E) located within the interchange area between NH Route 101 EB/I-293 SB, the NH Route 101 EB/I-293 SB on ramp, and the F.E. Everett Turnpike NB on ramp. The wetland is located within a small, forested depression. An 18" RCP drainage outlet located at the eastern edge of the wetland contributes to the hydrology of this area. The wetland area drains to an 18" RCP inlet located along the southern edge of the wetland, that drains under the NH Route 101 EB/I-293 SB on ramp, and outlets somewhere outside the Study Area to the South. Dominant vegetation in W-51 included sensitive fern (*Onoclea sensibilis*), glossy buckthorn, and red-osier

dogwood *(Swida sericea*). The majority of the tree cover was provided by upland species rooted outside of and along the edge of the wetland, and included white oak (*Quercus alba*), red oak, and gray birch (*Betula populifolia*). Soils were saturated at the surface throughout most of the wetland area, and the water table at the time of survey was located at approximately 3". Additional hydrology indicators were also present including water-stained leaves, iron deposits, and geomorphic position.

W-42

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: None

Photo Log Page #: 2

Description:

W-42 is a palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E) found in an isolated depression located in a forested area east of the F.E. Everett Turnpike, in between NH Route 101 EB/I-293 SB and NH Route 101 WB. The wetland is located approximately 90' east of the edge of existing pavement of the Turnpike. A portion of W-42 was previously delineated during the 2016 delineation and was identified as a potential vernal pool at that time. However, a follow up vernal pool survey was completed in April 2017 and it was determined that the wetland was not functioning as a vernal pool based on a lack of primary and secondary indicator species. Dominant vegetation in the wetland included glossy buckthorn, highbush blueberry (*Vaccinium corymbosum*), and red maple. Hydrology indicators included saturation at the surface, with the water table at a depth of approximately 4"; water-stained leaves, water-marks on trees, and geomorphic position. Mineral soils in the wetland included clay loams underlain by fine sandy loams.

W-52

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: W-55 (PEM1E, hydrologically connected via a 24" RCP)

Photo Log Page #: 11

Description:

W-52 is primarily a palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E). The wetland consists of two larger, low-lying depressions connected via a ditch/swale along the toe-of-slope of NH Route 101 WB. The area to the west includes a small area of palustrine emergent wetland dominated by cattails and reed canary grass (*Phalaris arundinacea*). The area to the east includes a small open water area that is semi-permanently flooded. There is also a small, isolated depression included as part of W-52 to the east, separated from the larger wetland area by a narrow upland area. W-52 drains to a 24" RCP inlet located along the northern edge of the wetland. This culvert flows under NH Route 101 WB and presumably outlets into W-55, a large palustrine emergent wetland. The outlet of this culvert was not located during the delineation. Dominant vegetation included red maple, white pine, highbush blueberry, winterberry (*Ilex verticillata*), cinnamon fern (*Osmundastrum cinnamomeum*), and witch-hazel (Hamamelis virginiana) along the wetland margins. Several of the white pine trees exhibited buttressed roots, a morphological adaptation for growing in wet conditions. Hydrologic indicators included surface water in the lowest lying areas, saturation at the surface throughout much of the wetland with the water table located within 12" of the surface. Additional indicators of hydrology included water-stained leaves and geomorphic position. Soils in the wetland contained a histic epipedon (organic surface layer), underlain by poorly drained clay loam.

W-53

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: None

Photo Log Page #: 12

Description:

W-42 is a palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E) found in an isolated depression located in a forested area east of the F.E. Everett Turnpike, in between NH Route 101 EB/I-293 SB and NH Route 101 WB. W-53 is located in between W-52 and W-54. A drainage outlet from NH Route 101 EB / I-293 SB contributes to the hydrology of this area. Dominant vegetation included red maple, white pine, black oak, and highbush blueberry. Hydrology indicators included water-stained leaves and geomorphic position. Soils in the wetland consisted of fine sandy loam and loams underlain by poorly drained clay loams.

W-54

Type: Palustrine Wetland

Classification: PEM1E

Associated Features: W-51 (PFO1E, hydrologically connected via an 18" RCP)

Photo Log Page #: 13

Description:

W-54 is a palustrine, emergent, persistent, seasonally flooded/saturated wetland (PEM1E) located east of the F.E. Everett Turnpike, in between NH Route 101 EB/I-293 SB and NH Route 101 WB. The wetland is primarily a drainage ditch/swale that drains to an 18" RCP inlet located along the southern edge of the wetland. Based on the other wetlands delineated in the vicinity, it appears this drainage pipe likely outlets into W-51 located to the southwest. Dominant vegetation in the wetland area included sensitive fern, royal fern (*Osmunda regalis*), cattails, fringed sedge (*Carex crinita*), red-osier dogwood, and quaking aspen. Soils were saturated at approximately 6"; however, no water table was observed at the time of survey. Additional

hydrology indicators included geomorphic position and passing the FAC-Neutral Test. Soils in W-54 were sandy clay loams.

W-55

Type: Palustrine Wetland

Classification: PEM1E

Associated Features: None

Photo Log Page #: 14

Description:

W-55 is a palustrine, emergent, persistent, seasonally flooded/saturated wetland (PEM1E) located east of the F.E. Everett Turnpike, in between The I-293 NB on ramp, NH Route 101 WB and the NH Route 101 WB on ramp. The wetland area is located in a relatively large depression, approximately 0.7 acres in size, located in the middle of the infield area bounded by the roadways and ramps mentioned above. The western and southern edge of the wetland contain palustrine forested areas, but the dominant cover type is emergent marsh. Dominant vegetation located throughout the majority of the interior of the wetland included common reed, broad-leaved cattail, and purple loosestrife. Soils in the interior of the wetland were saturated at the surface with a thin layer of muck present. Ledge/bedrock was located at a depth of approximately 7 inches, suggesting that this area is poorly drained and could potentially create a perched water table.

W-56

Type: Palustrine Wetland

Classification: PFO1/EM1E

Associated Features: S-15 (Intermittent Stream)

Photo Log Page #: 15

Description:

W-56 is a palustrine, emergent/forested, persistent/broad-leaved deciduous, seasonally flooded/saturated wetland located adjacent to an unnamed intermittent stream (S-15). The

wetland and stream originate from an 18" RCP outlet located at the southern end of the wetland. The majority of the wetland area is a narrow fringe wetland located adjacent to the stream, within the narrow floodplain. W-56 is located on the west side of the F.E. Everett Turnpike. In between NH Route 101 WB, NH Route 101 EB / I-293 SB, and the I-293 SB on ramp. A 15" RCP drainage outlet located at the northern end of the wetland also contributes to the hydrology of W-15. A palustrine emergent ditch/swale is located in the vicinity of the drainage outlet and drains southeast towards the larger wetland area and S-15. Vegetation in this area was dominated by tussock sedge (*Carex stricta*), marsh fern (*Thelypteris palustris*), and swamp candles (*Lysimachia terrestris*). Dominant vegetation found throughout the portion of W-56 located along the stream included cattails, common arrowhead (*Sagittaria latifolia*), jewelweed (*Impatiens capensis*), rice cut grass (*Leersia oryzoides*), sensitive fern, and red maple. Hydrology in the wetland included saturation at or near the surface with the water table located at approximately 15" or less. Soils in the wetland were sandy clay loams.

S-15 / S-11

Type: Intermittent Stream

Name: Unnamed

Classification: R4SB4/5C

Associated Features: W-56 (PFO1/EM1E); W-45 (PEM1/FO1E); W-44 (PFO1E/EM1E; PUBH); W-47 (PEM1/FO1E)

Photo Log Page #: 23 & 25

Description:

S-15 and S-11 are an unnamed intermittent stream and tributary of the Merrimack River located within the Study Area. They are the same stream system but were delineated as two different features. S-15 is located on the west of the Turnpike and S-11 is located east of the Turnpike. The existing stream has been modified by the existing highway construction. The stream enters the Study Area near the western edge of the Study Area from an 18" RCP that carries the stream under NH Route 101 EB / I-293 SB ramps. The stream is approximately 3'-4' wide, with a sandy channel substrate. There was approximately 1"-3" of clear water, with moderate flow at the time of the survey. The stream flows northwest through a PEM/FO wetland (W-56) before turning sharply to the northeast. The stream continues east through a section of channel along the toe-of-slope of NH Route 101 WB that has been modified by the placement of riprap along the banks, before flowing into a 24" RCP that carries the stream northeast, under NH Route 101 WB.

S-15 outlets from the 24" RCP on the north side of NH Route 101 WB and flows southeast along the toe-of-slope of the roadway for approximately 200' to a 24" RCP that carries the stream under the F.E. Everett Turnpike. There is a large scour hole at the outlet of S-15, and it appeared some recent repair work had been completed in the vicinity of the outlet. The stream takes a sharp bend immediately after the outlet and large boulders have been placed along the bank for scour protection. The stream averages approximately 8' in width along this reach. The substrate was predominantly sand with some small gravel and a few larger cobbles. The stream flows through a PFO/EM wetland (W-45). Vegetation along the banks included common arrowhead, jewelweed, rice cut grass, reed canary grass, skunk cabbage (*Symplocarpus foetidus*), and cattails. Trees and shrubs along the banks were dominated by northern arrowwood (*Viburnum dentatum*), speckled alder, red maple, and American Elm (*Ulmus americana*).

After flowing into the 24" RCP inlet underneath the F.E. Everett Turnpike S-15 emerges on the east side of the F.E. Everett Turnpike as S-11. The stream continues east flowing through the forested area and W-44 located within the cloverleaf formed by the I-293 NB Exit 3 off ramp. In the center of the cloverleaf the stream splits. The majority of the flow continues north along the main stem of the channel, however a portion flows down a steep slope into a PEM/PUB portion of W-44. The main channel continues north through W-44 to a 24" RCP that carries the stream north, under the ramp. The substrate on S-11 on the east side of the Turnpike is predominantly muck/mud with some coarser sand mixed in. Riprap has been placed along portions of the channel in the vicinity of the culvert inlets and outlets.

S-11 continues north under the ramp and flows through W-47 for a short distance before draining into a small PUB, ponded area. S-14 also joins S-11 just before the pond. The pond drains to a 24" RCP that goes under the I-293 / F.E. Everett NB ramp and outlets outside the Study Area. This area drains to the Merrimack River, located approximately 330' to the east.

W-45

Type: Palustrine Wetland

Classification: PFO1/EM1E

Associated Features: S-15 (Intermittent Stream)

Photo Log Page #: 4

Description:

W-45 is a palustrine, emergent/forested, persistent/broad-leaved deciduous, seasonally flooded/saturated wetland located adjacent to an unnamed intermittent stream (S-15). W-45 is located north of NH Route 101 WB, on the west side of the F.E. Everett Turnpike. The wetland area is a relatively narrow fringe wetland located adjacent to and within the floodplain of S-15. The wetland and stream are located along the toe-of-slope of the roadway embankment of NH Route 101 WB. Dominant vegetation in the wetland area included jewelweed, rice cut grass, arrow-leaved tearthumb (*Persicaria sagittata*), reed canary grass, cattails, and skunk cabbage. Trees in the overstory along the edge of the wetland and stream were dominated by red maple, American elm, and white pine. Species of saplings and shrubs include northern arrowwood and speckled alder. Soils were saturated at the surface; however, no water table was documented at the time of the survey. Additional hydrology indicators included geomorphic position and passing the FAC-Neutral Test. Soils in the wetland were loamy sands and sandy clay loams.

Functions & Values:

The functions and values of W-45 are limited by the relatively small size of the wetland, close proximity to the existing highway, and prior disturbance. The principal function of W-45 is sediment/shoreline stabilization. As noted above the wetland area is associated with S-15, an intermittent stream. The relatively small size of the wetland area reduces some of the overall functions and values. However, the wetland is also considered to be suitable for groundwater recharge/discharge, floodflow alternation, and fish and shellfish habitat, although no fish were observed during the field visit.

W-44

Type: Palustrine Wetland

Classification: PFO1E/EM1E; PUBH

Associated Features: S-11 (Intermittent Stream); S-13 (Intermittent Stream)

Photo Log Page #: 3

Description:

W-44 is a large wetland complex located within the cloverleaf formed by the I-293 NB off ramp / NH Route 101 WB on ramp. Portions of this wetland have been substantially disturbed/modified by prior construction activities. It appears that areas have been excavated and berms have been constructed, creating ponded areas. There are remnants of access roads in this area and drainage modifications have been made including the installation of culverts. Two intermittent streams, S-11 and S-13 are associated with W-44. There are also multiple drainage outlets from the existing roadway drainage system that outlet along the edge of W-44. The wetland includes areas of palustrine, forested, broad-leaved deciduous, seasonally flood/saturated wetland (PFO1E), dominated by skunk cabbage, poison ivy (*Toxicodendron radicans*), cinnamon fern, sensitive fern, glossy buckthorn, Japanese barberry, red maple, and white pine. The forested wetland areas are primarily located within the floodplain areas of the small intermittent streams. A palustrine emergent area is located in the southeastern half of the wetland and is dominated by cattails and common reed (*Phragmites australis*). There is also a small palustrine, unconsolidated bottom, permanently flooded wetland (PUBH) area located within W-44. This area drains to an 18" RCP outlet that has been partially washed out/collapsed. S-13 originates from the culvert outlet and flows north down a relatively steep grade to a 24" RCP that presumably flows under the highway ramps to the northeast and outlets outside the Study Area. Indicators of hydrology varied across the wetland complex due to the diversity within the wetland and ranged from areas of surface water, to saturation at the or near the surface, with the water table at a depth of less than 24". Additional hydrology indicators included geomorphic position and iron deposits. Soils were typically poorly drained sandy clay loams.

Functions & Values:

The overall functions and values of W-44 have been impacted and degraded by prior highway development, and modifications to the hydrology and connectivity to other wetland systems in the vicinity. The wetland is relatively large in size (approximately 2 acres) and contains a mix of wetland classes dominated my forested wetlands and emergent marsh with some areas of open water. There are also multiple streams associated with the wetland system. The wetland is also

in close proximity to the existing highway, a potential source of sediment and toxicants. Based on these criteria, W-44 is considered suitable for groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat (marginal), sediment/toxicant retention, nutrient removal, sediment/shoreline stabilization, and wildlife habitat. The overall value of the wildlife habitat is significantly reduced by the close proximity to and being completely circumscribed by the existing highway system. The principal functions and values are floodflow alteration, sediment/toxicant retention, nutrient removal, and sediment/shoreline stabilization. The inaccessibility of the site due to the location within the highway interchange as well as prior disturbance limit some of the other functions and values such as recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics.

S-13

Type: Intermittent Stream

Name: Unnamed

Classification: R4SB3C

Associated Features: W-44

Photo Log Page #: 24

Description:

S-13 is an unnamed intermittent stream and tributary of the Merrimack River. The stream and the surrounding area have been heavily modified by previous highway construction activities. The stream originates from a collapsed 18" RCP outlet that drains from part of W-44, that includes a PEM/PUB wetland area. The stream meanders down a relatively steep slope for approximately 50' before reaching a 24" RCP inlet that carries the stream under the I-293 / F.E. Everett Turnpike NB ramp. The culvert outlets outside the Study Area to the east, before flowing into the Merrimack River. The stream was approximately 3'-4' wide. The substrate of the stream was primarily gravel. Iron deposits were present within the stream and the adjacent wetland area. Vegetation along the banks of the stream included skunk cabbage, Japanese barberry, glossy buckthorn, red maple, and American elm.

S-14

Type: Intermittent Stream

Name: Unnamed

Classification: R4SB4C

Associated Features: W-47 (PFO1E/EM1E; PUBH); S-11 (Intermittent Stream)

Photo Log Page #: 31

Description:

S-14 is an unnamed intermittent stream that originates within W-47. The stream drains out of a large PEM cattail marsh. Portions of the marsh were inundated with water at the time of survey. The stream originates at a head cut near the southern limits of the marsh. The stream flows southeast for a distance of approximately 200' before flowing into S-11, just before the ponded PUB area. The average width of the stream is approximately 4' and the substrate was predominantly sand. The wetland is bordered by adjacent palustrine forested wetland along both banks. Dominant vegetation along the banks included skunk cabbage, jewelweed, sedges (*Carex spp.*), and red maple.

W-47

Type: Palustrine Wetland

Classification: PEM1/FO1E; PUBH

Associated Features: S-11 (Intermittent Stream); S-14 (Intermittent Stream)

Photo Log Page #: 6

Description:

W-47 is a large wetland complex located on the east side of the F.E. Everett Turnpike between the Turnpike and the I-293 NB on ramp. The wetland area is made up of a large palustrine, emergent, persistent, seasonally flooded/saturated (PEM1E) area. The PEM portion of W-47 is primarily a large cattail marsh, with areas of wet meadow interspersed throughout the slightly higher elevations in the wetland. An intermittent stream (S-14) forms at the southwestern end of the marsh and flows southeast into S-11. The two streams flow through a palustrine forested wetland area before draining into a small pond (PUBH) in the southeastern corner of W-47.

Based on the location and existing drainage modifications, it is likely this pond was constructed or substantially modified by prior highway construction activities. Vegetation in the emergent portion of the wetland is dominated by cattails, purple loosestrife, and reed canary grass. Portions of the wetland area contained surface water, while other areas were saturated at or near the surface.

Functions & Values:

W-47 is a relatively large wetland complex (approximately 3.4 acres), with a variety of wetland classes and cover types, as well as multiple intermittent streams associated with the wetland. The wetland is also in close proximity to the existing highway, a potential source of sediment and toxicants. Based on these factors the wetland is considered suitable for groundwater recharge/discharge, floodflow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production/export, sediment/shoreline stabilization, wildlife habitat, and visual quality/aesthetics. Unlike many of the forested wetlands, the large emergent cattail marsh provides some visual quality as seen from the highway. Given W-47's large size and association with streams, one of the principal functions and values is flood flow alteration. The large wetland area and open water portion provide flood storage potential. Additional principal functions include sediment/toxicant retention and nutrient removal. Prior disturbance and the inaccessibility of the site due to the location within the highway interchange limit some of the other functions and values such as recreation, educational/scientific value, uniqueness/heritage.

W-46

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: None

Photo Log Page #: 5

Description:

W-46 is a palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E) found in an isolated depression located on the west side of the F.E. Everett Turnpike, in the cloverleaf formed by the I-293 SB on ramp. Dominant vegetation in this wetland included cinnamon fern, marsh fern, glossy buckthorn, red maple, and white pine. Indicators of wetland hydrology included water-stained leaves and geomorphic position. Soils in the wetland were clay loams underlain by silt loams.

Functions & Values:

W-46 is a relatively small (approximately 0.07-acre), isolated, wetland area. Therefore, the overall functions and values of this wetland are limited. The wetland lacks a defined outlet and consist of a confined depression, located in close proximity to the highway. W-46 is considered suitable for groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and nutrient removal. The principal function is flood flow alteration, but this function is limited by the wetland's location, lack of association with adjacent surface waters, and its relatively small size.

W-48

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: S-12 (Intermittent Stream)

Photo Log Page #: 7

Description:

W-48 is a relatively large palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E) located on the west side of the F.E. Everett Turnpike, in the cloverleaf formed by the I-293 SB on ramp. W-48 is located north of W-46 and does not have a direct hydrologic connection. A small intermittent stream (S-12) originates within W-48 and flows east for a distance of approximately 70' to an 18" RCP that carries the stream under the F.E. Everett Turnpike. Dominant vegetation in the wetland included skunk cabbage, cinnamon fern, royal fern, scouring rush (*Equisetum hyemale*), Virginia-creeper (*Parthenocissus quinquefolia*), glossy buckthorn, red maple, and American elm. Indicators of hydrology included geomorphic position, drainage patterns, saturation with in the top 12" throughout much of the wetland area, with the water table located within 24" of the soil surface. Soils found in the wetland were poorly drained sandy clay loams underlain by sand.

Functions & Values:

The overall functions and values of W-48 are limited by the close proximity to the existing highway and prior disturbance from highway construction activities. The wetland is relatively large (approximately 1.4 acres) and contains a variety of wetland classes and cover types. The wetland area also serves as the headwaters of a small intermittent stream that originates within the wetland area. W-48 is considered suitable for groundwater recharge/discharge, floodflow

alteration, sediment/toxicant retention, nutrient removal, production/export, and wildlife habitat. The principal functions included floodflow alteration, sediment/toxicant retention, and nutrient removal. Wildlife habitat value is limited due to the close proximity of the existing highway and interchange ramps circumscribing the area. Prior disturbance and the inaccessibility of the site due to the location within the highway interchange limit some of the other functions and values such as recreation, educational/scientific value, uniqueness/heritage, and visual quality/aesthetics.

S-12

Type: Intermittent Stream

Name: Unnamed

Classification: R4SB5C

Associated Features: W-48 (PFO1E); W-47 (PEM1/FO1E; PUBH, hydrologically connected via an 18" RCP)

Photo Log Page #: 32

Description:

S-12 originates within W-48 at a head cut and flows east for approximately 70' before entering an 18" RCP that carries the stream under the F.E. Everett Turnpike. The culvert outlets on the east side of the turnpike into dense cattail marsh (W-47). No stream channel is present on the outlet side. S-12 has an average width between 6'-8'. The substrate is primarily muck, with iron deposits present throughout the channel. Vegetation along the stream was dominated by skunk cabbage, glossy buckthorn, and red maple.

W-49

Type: Palustrine Wetland

Classification: PEM1/SS1E

Associated Features: S-16 (Intermittent Stream)

Photo Log Page #: 8

Description:

W-49 is a large palustrine, emergent, persistent, seasonally flooded/saturated wetland area located on the west side of the F.E. Everett Turnpike in the northern portion of the I-293 / NH Route 101 interchange. The wetland area adjacent to the Turnpike is predominantly an emergent cattail marsh. The western portion of the wetland is dominated by a scrub-shrub wetland. An intermittent stream (S-16) originates from an 18" RCP near the southwestern corner of the wetland. S-16 flows through the wetland for approximately 350' before the stream loses its channel characteristics of a defined bed and bank and sheet flows through the dense emergent vegetation in the wetland. Dominant vegetation in the PEM portion of the wetland includes cattails and purple loosestrife. Soils in the interior of the wetland were saturated at the surface and consisted of mucky organic material. Along the margins of the wetland, soils were saturated at a depth of approximately 6" with the water table located at a depth of approximately 20". Additional indicators of hydrology included drainage patterns, iron deposits, and geomorphic position. Soils in the wetland are poorly drained sandy clay loams.

Functions & Values:

W-49 is a relatively large wetland complex (approximately 3.0 acres). The majority of the wetland area consists of a cattail marsh. The forested/scrub-shrub portion in the southwest corner also contains a discontinuous intermittent stream. The wetland is also in close proximity to the existing highway, a potential source of sediment and toxicants. Based on these factors the wetland is considered suitable for groundwater recharge/discharge, flood flow alteration, sediment/toxicant retention, nutrient removal, sediment/shoreline stabilization, wildlife habitat, and visual quality/aesthetics. Unlike many of the forested wetlands, the large emergent cattail marsh provides some visual quality as seen from the highway. The principal functions and values are floodflow alteration, sediment/toxicant retention, and nutrient removal. Wildlife habitat value was limited due to the close proximity of the existing highway and interchange ramps circumscribing the area. Prior disturbance and the inaccessibility of the site due to the location within the highway interchange limit some of the other functions and values such as recreation, educational/scientific value, uniqueness/heritage.

S-16

Type: Intermittent Stream

Name: Unnamed

Classification: R4SB4C

Associated Features: W-49 (PEM1/FO1E)

Photo Log Page #: 26

Description:

S-16 is an unnamed intermittent stream located on the west side of the F.E. Everett Turnpike near the northern end of the interchange area. S-16 flows out of an 18" RCP outlet located between the I-203 SB / NH Route 101 EB ramp and the F.E. Everett Turnpike SB on ramp. The stream flows northeast, through W-49, before eventually losing its stream characteristics of a defined bed and banks. Water sheet flows diffusely through the densely vegetated cattail marsh. There is a large scour hole at the culvert outlet approximately 12' wide x 15' long and approximately 2' deep. The stream width varies from approximately 5'-7'. Water in the stream at the time of survey was clear, with low flows averaging about 1" deep. The stream channel substrate was sand with some gravel bars present. Vegetation along the banks was dominated by sensitive fern, jewelweed, reed canary grass, rice cut grass, and red maple.

S-17

Type: Perennial Stream

Name: Bowman Brook

Classification: R3UB1H

Associated Features: S-19 (Intermittent Stream); S-20 (Intermittent Stream); W-57 (PFO1E); W-58 (PFO1E)

Photo Log Page #: 27

Description:

S-17 includes the delineated portion of Bowman Brook, a perennial 3rd order tributary of the Merrimack River, located just north of the interchange. Bowman Brook flows from the west under the F.E. Everett Turnpike via twin 72" RCPs. On the upstream side of the Turnpike crossing

two intermittent streams, S-19 and S-20 flow into Bowman Brook immediately upstream from the inlet. On the downstream end there is a large scour hole. The stream flows east from the outlet for approximately 300' to the confluence with the Merrimack River. The banks downstream are relatively high and steep. The top of bank was delineated along this segment of Bowman Brook. The stream had moderate flow at the time of survey. Water was slightly turbid and ranged in depth from 1" to 12" deep. The substrate was primarily cobble-gravel. The average width of the channel was approximately 30'.

W-62

Type: Palustrine Wetland

Classification: PEM1E

Associated Features: S-19 (Intermittent Stream)

Photo Log Page #: 21

Description:

W-62 is a small palustrine, emergent, persistent, seasonally flooded/saturated wetland (PEM1E) located west of the I-293 SB ramp. The wetland area is located at the toe-of-slope of the turnpike and a ditch that drains from the south between the shopping plaza parking lot and the Turnpike off ramp. W-62 is located adjacent to intermittent stream S-19, located along the western edge of the Study Area. The wetland area has been previously disturbed by highway construction activities and drainage modifications including the construction of drainage ditches, and the installation of the existing right-of-way fence. The wetland is dominated by reed canary grass, deer-tongue grass, and rough goldenrod.

S-19

Type: Intermittent Stream

Name: Unnamed

Classification: R4SB3C

Associated Features: S-17 (Perennial Stream, Bowman Brook); W-62 (PEM1E)

Photo Log Page #: 29

Description:

S-19 is an intermittent stream located along the western edge of the Study Area, immediately north of the interchange. The stream originates from a culvert outlet located outside the Study Area. W-62 is located adjacent to the upper portion of the stream in the vicinity of the outlet. The stream is channelized with riprap placed in the channel along much of the length. The stream enters the project area and flows north for approximately 80' before the confluence with Bowman Brook immediately upstream from the twin 72" culverts that carry Bowman Brook under the Turnpike.

S-20

Type: Intermittent Stream

Name: Unnamed

Classification: R4SB3C

Associated Features: S-17 (Perennial Stream, Bowman Brook)

Photo Log Page #: 30

Description:

S-20 is an unnamed intermittent stream located on the west side of the F.E. Everett Turnpike, north of the interchange area. S-20 flows south out of a wetland area located outside the existing right-of-way and flows into Bowman Brook west of the Study Area. The existing channel appears to have been ditched/modified for drainage purposes. Stone riprap lines the majority of the channel. It is unclear if this feature is a natural stream that has been modified or if the area was excavated/constructed for drainage purposes. At the time of the survey there was some flow in

the lower portion of the stream in the vicinity of the confluence with Bowman Brook, however the upper portion was dry.

W-57

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: S-17 (Perennial Stream, *Bowman Brook*)

Photo Log Page #: 16

Description:

W-57 is a palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E), located adjacent to Bowman Brook (S-17). The small wetland area is a narrow shelf along the river in the vicinity of the outlet of the culverts that carry the stream under the Turnpike. Continuing downstream the banks become steeper and higher and the stream does not have access to the adjacent floodplain. Dominant vegetation in W-57 included red maple, glossy buckthorn, silky dogwood (*Swida amomum*), sensitive fern, American water-horehound (*Lycopus americanus*), yellow wood sorrel (*Oxalis stricta*), and oriental bittersweet (*Celastrus orbiculatus*). Soils were saturated at approximately 12" at the time of survey, and the water table was located at a depth of approximately 26". Soils in the wetland were sandy clay loams.

W-58

Type: Palustrine Wetland

Classification: PFO1/SS1E

Associated Features: None

Photo Log Page #: 17

Description:

W-58 is a palustrine forested/scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO/SS1E) located adjacent to and within the floodplain of the Merrimack River in the vicinity of the confluence of Bowman Brook. Dominant vegetation in the wetland area included northern arrowwood, speckled alder, silver maple (*Acer saccharinum*), red

maple, deer-tongue grass, and false indigo bush (*Amorpha fruticosa*). River birch (*Betula nigra*), a state-listed threatened species was also documented throughout W-58. Soils in the wetland area were sandy alluvial deposits. Evidence of flooding included drift deposits and wrack lines. Several trees throughout the wetland also exhibited the morphological adaptation of adventitious roots, a response to anaerobic conditions caused by inundated soils.

W-61

Type: Palustrine Wetland

Classification: PEM1E

Associated Features: None

Photo Log Page #: 20

Description:

W-61 is a palustrine, emergent, persistent, seasonally flooded/saturated wetland (PEM1E) located on the west side of the turnpike, north of the I-293 / NH Route 101 interchange. The wetland area is located along the edge of the existing tree line, in a shallow depression/swale. The area receives sheet flow runoff from the highway and parking lots to the west. W-61 is representative of a wet meadow with a scrub-shrub fringe along the western edge of the wetland. The majority of the wetland area appears to be frequently mowed by highway maintenance activities. Dominant vegetation in W-61 included creeping bentgrass (*Agrostis stolonifera*), creeping buttercup (*Ranunculus repens*), sensitive fern, soft rush (*Juncus effusus*), purple loosestrife, and New York fern (*Parathelypteris noveboracensis*). Shrubs along the edge of the wetland were dominated by glossy buckthorn and northern arrowwood. Indicators of wetland hydrology included oxidized rhizospheres and geomorphic position. Soils in the wetland consisted of a surface layer of loam underlain by silty clay loam. Redoximorphic features including oxidized root channels were present starting at the surface of the soil.

W-60

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: None

Photo Log Page #: 19

Description:

W-60 is a palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E) located on the west side of the Turnpike, north of W-61. The wetland area collects sheet flow runoff from the roadway and surrounding area and drains towards the south to a catch basin. There is no jurisdictional wetland or stream feature located at the outlet of the drainage structure. Dominant vegetation in the wetland included red maple, American elm, glossy buckthorn, sweet wood-reed (*Cinna arundinacea*), and royal fern. The area exhibited the hydrology indicators of water-stained leaves, drainage patterns, and geomorphic position. Soils in the wetland were loams underlain by clay loam/silty clay loam, with redoximorphic features starting within 1" of the soil surface.

W-59

Type: Palustrine Wetland

Classification: PFO1E

Associated Features: S-18 (Perennial Stream, *McQuesten Brook*)

Photo Log Page #: 18

Description:

W-59 is a palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated wetland (PFO1E) located in a confined depression at the toe-of-slope of a steep embankment. The wetland is located on the west side of the Turnpike near the northern limits of the Study Area, south of McQuesten Brook. The wetland outlet drains towards and is adjacent to McQuesten Brook in the vicinity of the culvert inlet. The interior of the wetland is concave and unvegetated. The wetland contained water stained leaves, and approximately 1" of surface water in the interior of the wetland at the lowest point. Common duckweed (*Lemma minor*) a free-floating, aquatic plant was present on the leaf litter and the remaining surface water, indicating that this

area is likely inundated for a relatively long hydroperiod. Dominant vegetation along the edges of the depression included jewelweed, poison ivy, musclewood, red maple, green ash (*Fraxinus pennsylvanica*), and black birch (*Betula lenta*). Soils in the middle of the wetland contained a layer of muck underlain by clay loam and sandy clay loam.

S-18

Type: Perennial Stream

Name: McQuesten Brook

Classification: R3UB1/2H

Associated Features: W-59 (PFO1E)

Photo Log Page #: 28

Description:

S-18 includes the delineated portion of McQuesten Brook located within the Study Area. McQuesten Brook is a 1st order perennial stream and tributary of the Merrimack River. On the upstream side the stream flows southeast into the project area. The average width is approximately 12'. The substrate is primarily cobble and gravel. The stream flows into a 48" RCP that carries the stream east under the Turnpike. On the downstream side the stream meanders, making two sharp 90-degree bends before reaching the confluence with the Merrimack River, approximately 300' downstream from the outlet. The top of bank was also delineated along the upstream and downstream reaches. The stream channel downstream is deeply incised with high sandy banks. Significant erosion and scour are occurring downstream. The substrate on the downstream end is primarily sand. At the time of survey, the water in the stream was clear, approximately 3"-4" deep. The existing outlet is perched approximately 6"-8" above the streambed.

INVASIVE SPECIES

Invasive plant species are prevalent throughout the majority of the Study Area. Common invasive species documented within the Study Area included Oriental bittersweet, glossy buckthorn, purple loosestrife, autumn olive, Japanese barberry, and Morrow's honeysuckle. In some areas these invasive species are the dominant vegetation species present. Additional invasive species identified within the Study Area included common reed, Japanese knotweed (*Fallopia japonica*), burning bush (*Euonymus alatus*), multiflora rose (*Rosa multiflora*), spotted knapweed (*Centaurea maculosa*), and Norway maple (*Acer platanoides*).

Type I:

Oriental bittersweet is common vine that occurs along the forested edges along the roadway and within the interchange area. Bittersweet is dominant in many areas, forming dense thickets and climbing up trees into the canopy layer. Glossy buckthorn is another more common invasive shrub species found throughout the forested uplands and wetlands, and dominant throughout much of the Study Area. Autumn olive is a relatively common invasive shrub located along the edges of the forested areas as well as occurring as individuals or small clusters of shrubs growing in the open areas within the right-of-way. Morrow's honeysuckle is less common than glossy buckthorn and autumn olive, and typically occurs as individual shrubs or small clusters interspersed throughout the forested areas within the Study Area. The forested areas in the vicinity of W-44 and W-47 contained dense patches of Japanese barberry.

Type II:

Patches of common reed were located within W-55 and W-44. Purple loosestrife is typically associated with the palustrine emergent wetlands located within the Study Area and was documented in wetlands 33, 35, 40, 41, 52, 54, 43, 56, 47, 49, 61, and 60. Patches of Japanese knotweed are located along the northern embankment of NH Route 101 WB on both sides of the Turnpike. There are also large patches of Japanese knotweed north of the interchange along the roadway embankments and on the west side of the turnpike in the vicinity of Beaudoin Street.

RARE PLANTS

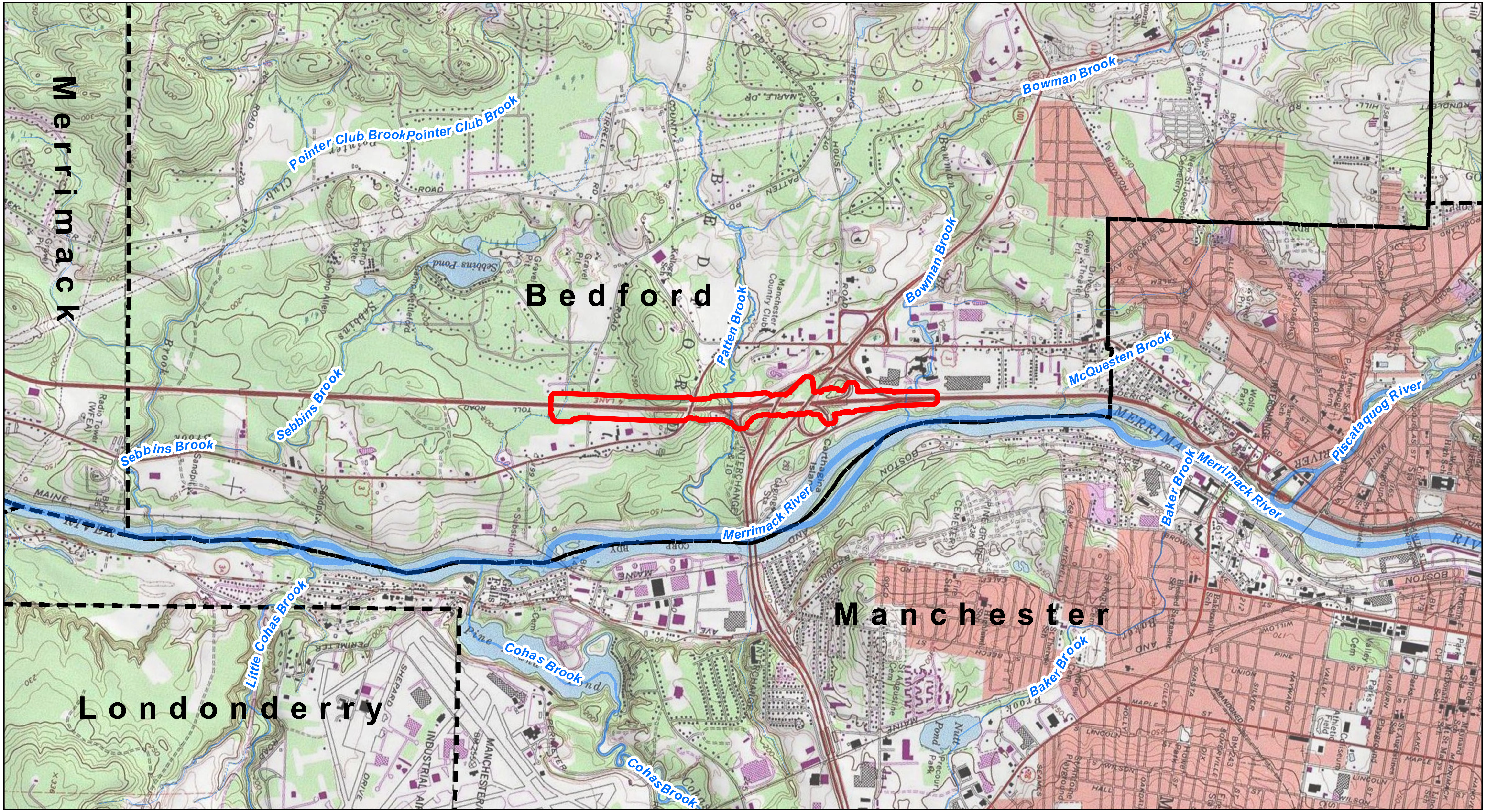
A rare plant survey was completed in July 2019 for bird-foot violet (*Viola pedata*), clasping milkweed (*Asclepias amplexicaulis*), and river birch. No individuals or populations of these were identified. The Study Area for the 2020 delineation was expanded and included additional areas that were not included in the Study Area of the 2019 rare plant survey. The latest NHB DataCheck Results Letter also identified documented occurrences of sessile-fruited arrowhead (*Sagittaria rigida*) and Wright's spikesedge (*Eleocharis diandra*) in the vicinity of the Study Area. The latter two species are associated with habitat found in and along the Merrimack River.

Occurrences of any rare plants observed during the delineation were documented. As mentioned previously in this report, river birch was observed growing along the banks of the Merrimack River within portions of W-58, a forested/scrub-shrub wetland located within the floodplain of the Merrimack River.

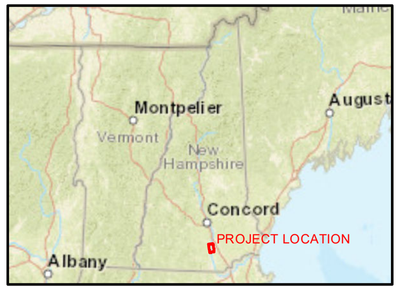
Soils consisted of sandy alluvial deposits. Evidence of frequent flooding was observed including drift lines, wrack lines, and adventitious roots on some of the trees. Approximately 30-50 individual river birches ranging from small saplings to relatively large trees were located within the Study Area. The population appeared to be healthy and relatively stable. Access to this area is restricted by the presence of the Merrimack River and the F.E. Everett Turnpike. Information on the location of this population was forwarded to NHB for their records.

Photo 1: River Birch Tree Growing Along the Merrimack River

Photo 2: River Birch Leaves



13761D FEET Northern Segment Project Area
Towns
Streams



0 2,000 4,000
Feet

NHDOT 13761D FEET NORTH
BEDFORD, NEW HAMPSHIRE

PROJECT LOCATION MAP

SCALE :	DATE :	FIGURE :
1 inch = 2,000 feet	OCTOBER 2020	1

McFarland Johnson

M:\18539.00 CHA-North FEET Permitting\Draw\GIS\Wetland Permit Figures\Figure 1 - USGS Location Map FEET North.mxd

INSET 2.1: 2016/2017 WETLAND DELINEATION - SOUTHERN END OF 13761D CONTRACT

1 inch = 600 feet

Figure 2.1 Matchline

SEE INSET 2.1 ABOVE FOR SOUTHERN PORTION OF 13761D CONTRACT, DELINEATION COMPLETED 2016/2017

FE Everett Tpke S

FE Everett Tpke N

Everett Tpke N

Sunset Ln

Court Rd

South River Rd

I-293 SB Exit 3 On ramp (NH 101)

I-293 NB Exit 3 On ramp (I-293)

I-293 NB Exit 3 Off ramp (NH 101)

N H 101 By-Pass

Interstate 293 S

NH Route 101 W

W-33 W-34 W-35 W-36 W-37 W-38 W-39 W-40 W-41 W-42 W-43 W-44 W-50 W-52 W-55 W-56

S-10 S-11 S-13 S-15

FEET North Additional Study Area (2020)

Original Study Area (2016-2017)

NWI Plus NH

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

13761D FEET North Delineated Wetlands (2020)

13761D FEET North Delineated Wetlands (2020)

13761D FEET North Delineated Surface Waters (2020)

Location

OHW

OHW/TOB

TOB

Delineated Wetlands (2016/2017)

Delineated Wetlands (2016/2017)

Delineated Surface Waters (2016/2017)

Location

OHWM

TOB

INSET 2.1

0 140 280

Feet

NHDOT 13761D FEET NORTH

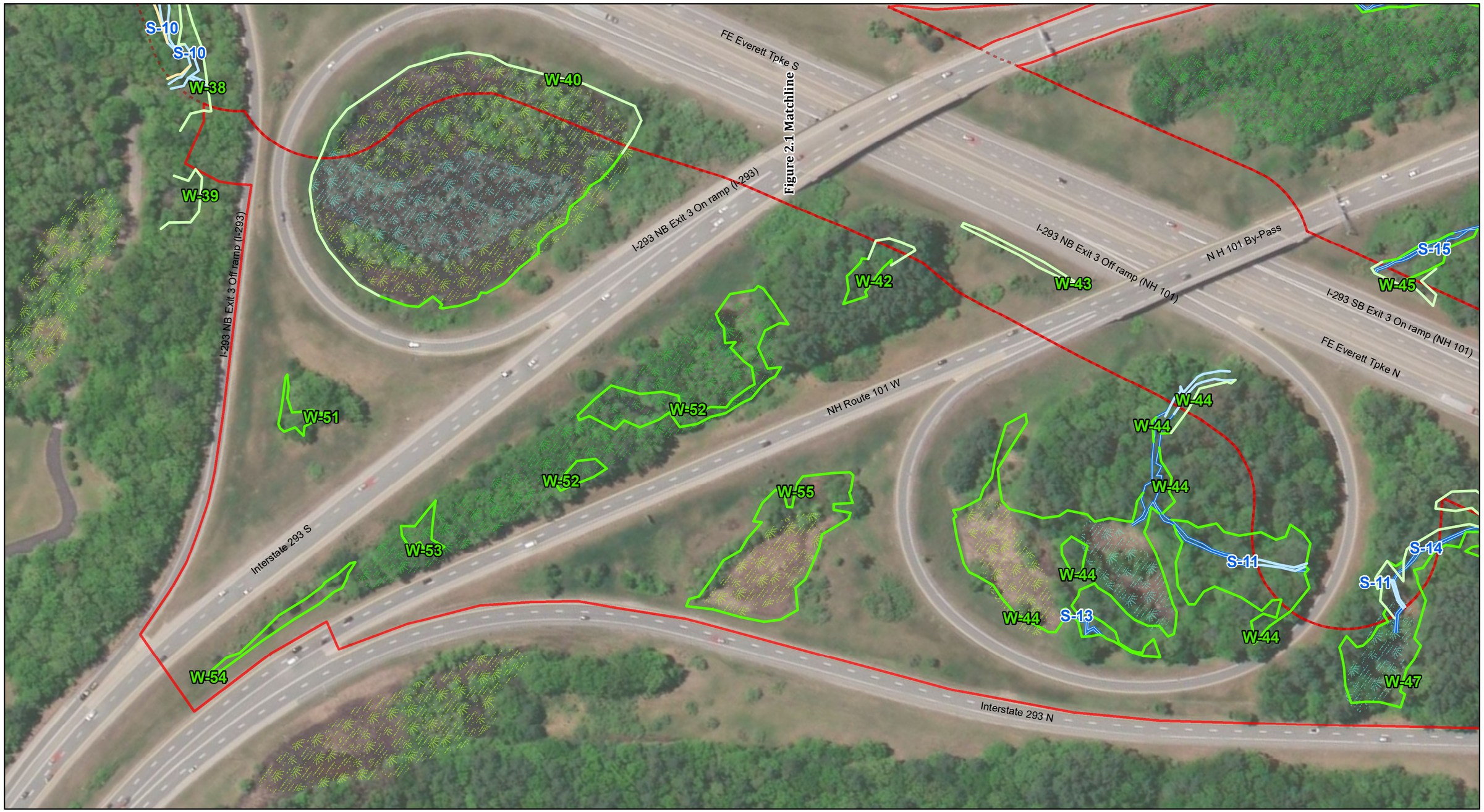
BEDFORD, NEW HAMPSHIRE

WETLAND DELINEATION MAPS

SCALE :	DATE :	FIGURE :
1 inch = 150 feet	APRIL 2021	2.1

McFarland Johnson

M:\18415.01 Concord I-89 Exit 2 Study\Draw\GIS\NEPA Figures\Figure 2 - FEET North Delineation Figure REVISED April 2021.mxd



FEET North Additional Study Area (2020)
Original Study Area (2016-2017)

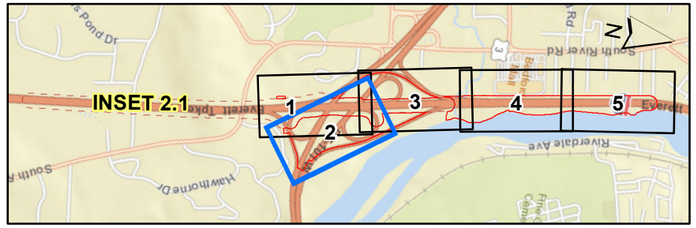
NWI Plus NH
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

13761D FEET North Delineated Wetlands (2020)
13761D FEET North Delineated Wetlands (2020)

13761D FEET North Delineated Surface Waters (2020)
Location
- OHW
- OHW/TOB
- TOB

Delineated Wetlands (2016/2017)
Delineated Wetlands (2016/2017)

Delineated Surface Waters (2016/2017)
Location
- OHWM
- TOB



0 140 280
Feet

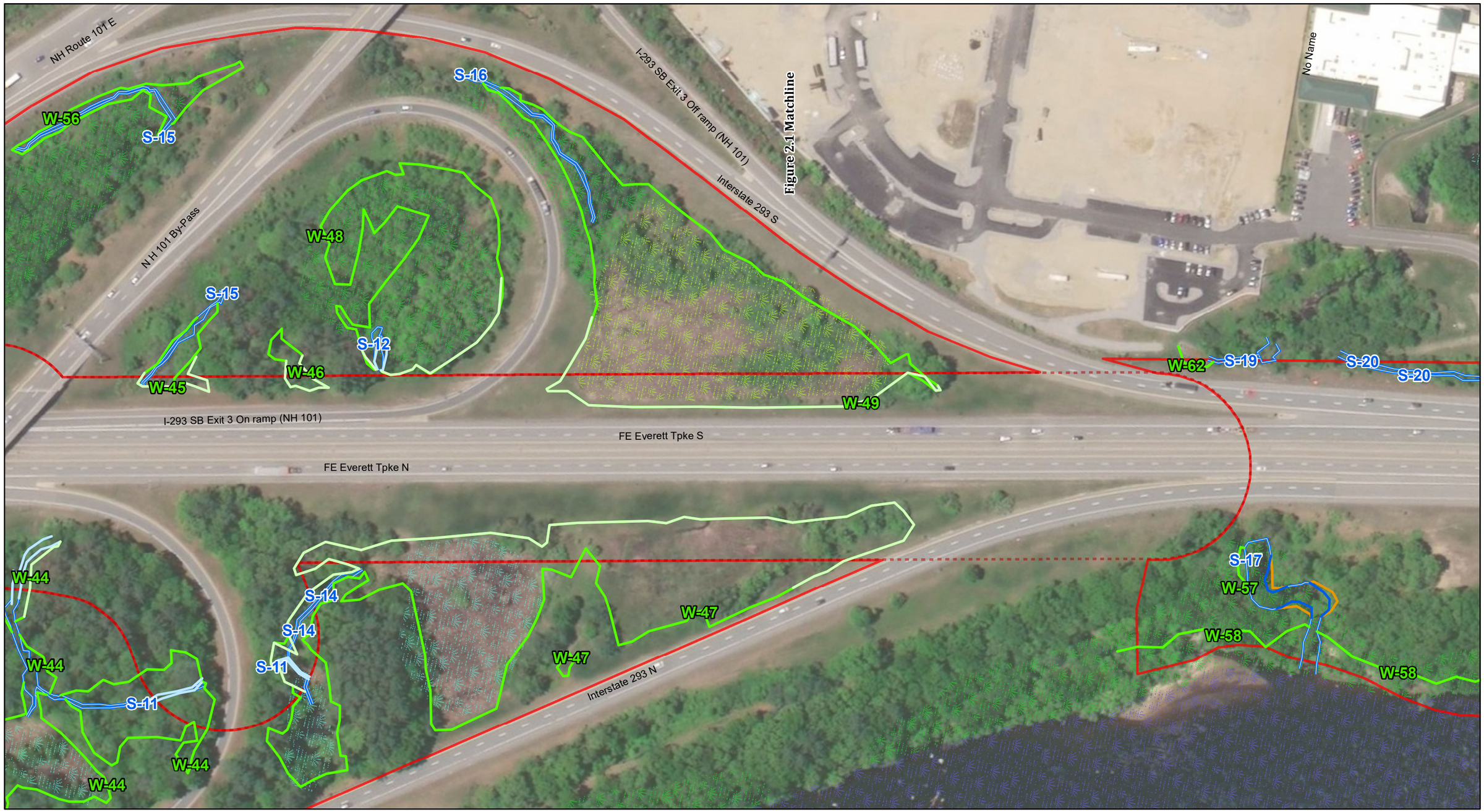
NHDOT 13761D FEET NORTH
BEDFORD, NEW HAMPSHIRE

WETLAND DELINEATION MAPS

SCALE :	DATE :	FIGURE :
1 inch = 150 feet	APRIL 2021	2.2

McFarland Johnson

M:\18539.00 CHA-North FEET Permitting\Draw\GIS\Wetland Delineation Report Figures\Figure 2 - FEET North Delineation Figure REVISED April 2021 Pages2-5.mxd



FEET North Additional Study Area (2020)
Original Study Area (2016-2017)

NWI Plus NH

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

13761D FEET North Delineated Wetlands (2020)

13761D FEET North Delineated Wetlands (2020)

13761D FEET North Delineated Surface Waters (2020)

Location

- OHW
- OHW/TOB
- TOB

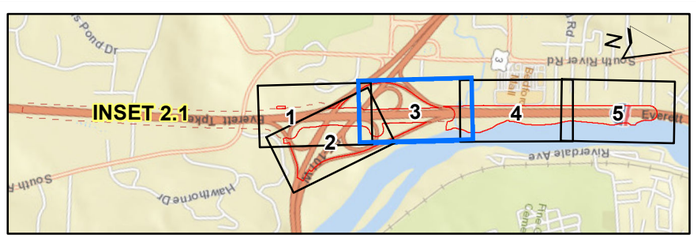
Delineated Wetlands (2016/2017)

Delineated Wetlands (2016/2017)

Delineated Surface Waters (2016/2017)

Location

- OHWM
- TOB



0 140 280

Feet

NHDOT 13761D FEET NORTH

BEDFORD, NEW HAMPSHIRE

WETLAND DELINEATION MAPS

SCALE :	DATE :	FIGURE :
1 inch = 150 feet	APRIL 2021	2.3

McFarland Johnson

M:\18539.00 CHA-North FEET Permitting\Draw\GIS\Wetland Delineation Report Figures\Figure 2 - FEET North Delineation Figure REVISED April 2021 Pages2-5.mxd

FEET North Additional Study Area (2020)
Original Study Area (2016-2017)

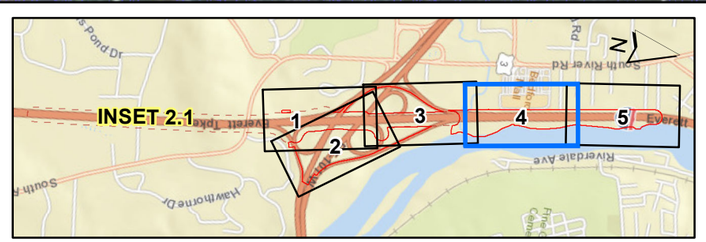
NWI Plus NH
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

13761D FEET North Delineated Wetlands (2020)
13761D FEET North Delineated Wetlands (2020)

13761D FEET North Delineated Surface Waters (2020)
Location
- OHW
- OHW/TOB
- TOB

Delineated Wetlands (2016/2017)
Delineated Wetlands (2016/2017)

Delineated Surface Waters (2016/2017)
Location
- OHWM
- TOB



0 140 280
Feet

NHDOT 13761D FEET NORTH
BEDFORD, NEW HAMPSHIRE

WETLAND DELINEATION MAPS

SCALE :	DATE :	FIGURE :
1 inch = 150 feet	APRIL 2021	2.4

McFarland Johnson

M:\18539.00 CHA-North FEET Permitting\Draw\GIS\Wetland Delineation Report Figures\Figure 2 - FEET North Delineation Figure REVISED April 2021 Pages2-5.mxd

FEET North Additional Study Area (2020)
Original Study Area (2016-2017)

NWI Plus NH
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

13761D FEET North Delineated Wetlands (2020)
- 13761D FEET North Delineated Wetlands (2020)

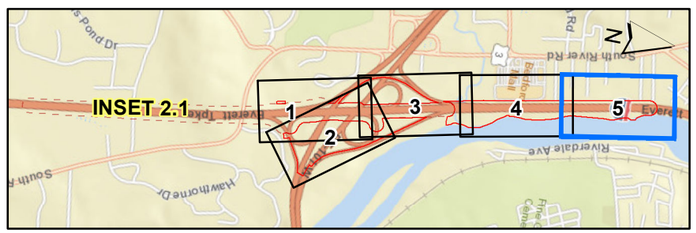
13761D FEET North Delineated Surface Waters (2020)

Location
- OHW
- OHW/TOB
- TOB

Delineated Wetlands (2016/2017)
- Delineated Wetlands (2016/2017)

Delineated Surface Waters (2016/2017)

Location
- OHWM
- TOB



0 140 280
Feet

NHDOT 13761D FEET NORTH
BEDFORD, NEW HAMPSHIRE

WETLAND DELINEATION MAPS

SCALE :	DATE :	FIGURE :
1 inch = 150 feet	APRIL 2021	2.5

McFarland Johnson

M:\18539.00 CHA-North FEET Permitting\Draw\GIS\Wetland Delineation Report Figures\Figure 2 - FEET North Delineation Figure REVISED April 2021 Pages2-5.mxd

Photo 1: Wetland 40 (W-40) – PEM (June 22-26, 2020)

Photo 2: Upland 40 (U-40) (June 22-26, 2020)

Photo 3: Wetland 42 (W-42) – PFO (June 22-26, 2020)

Photo 4: Upland 42 (U-42) (June 22-26, 2020)

Photo 5: Wetland 44 (W-44) – PFO (June 22-26, 2020)

Photo 6: Upland 44 (U-44) (June 22-26, 2020)

Photo 7: Wetland 45 (W-45) – PEM (June 22-26, 2020)

Photo 8: Upland 45 (U-45) (June 22-26, 2020)

Photo 9: Wetland 46 (W-46) – PFO (June 22-26, 2020)

Photo 10: Upland 46 (U-46) (June 22-26, 2020)

Photo 11: Wetland 47 (W-47) – PEM (June 22-26, 2020)

Photo 12: Upland 47 (U-47) (June 22-26, 2020)

Photo 13: Wetland 48 (W-48) – PFO (June 22-26, 2020)

Photo 14: Upland 48 (U-48) (June 22-26, 2020)

Photo 15: Wetland 49 (W-49) – PEM (June 22-26, 2020)

Photo 16: Upland 49 (U-49) (June 22-26, 2020)

Photo 17: Wetland 50 (W-50) – PSS (June 22-26, 2020)

Photo 18: Upland 50 (U-50) (June 22-26, 2020)

Photo 19: Wetland 51 (W-51) – PSS (June 22-26, 2020)

Photo 20: Upland 51 (U-51) (June 22-26, 2020)

Photo 21: Wetland 52 (W-52) – PFO (June 22-26, 2020)

Photo 22: Upland 52 (U-52) (June 22-26, 2020)

Photo 23: Wetland 53 (W-53) – PFO (June 22-26, 2020)

Photo 24: Upland 53 (U-53) (June 22-26, 2020)

Photo 25: Wetland 54 (W-54) – PSS/EM (June 22-26, 2020)

Photo 26: Upland 54 (U-54) (June 22-26, 2020)

Photo 27: Wetland 55 (W-55) – PEM (June 22-26, 2020)

Photo 28: Upland 55 (U-55) (June 22-26, 2020)

Photo 29: Wetland 56 (W-56) – PEM (June 22-26, 2020)

Photo 30: Upland 56 (U-56) (June 22-26, 2020)

Photo 31: Wetland 57 (W-57) – PFO (July 28-30, 2020)

Photo 32: Upland 57 (U-57) (July 28-30, 2020)

Photo 33: Wetland 58 (W-58) – PFO (July 28-30, 2020)

Photo 34: Upland 58 (U-58) (July 28-30, 2020)

Photo 35: Wetland 59 (W-59) – PFO (July 28-30, 2020)

Photo 36: Upland 59 (U-59) (July 28-30, 2020)

Photo 37: Wetland 60 (W-60) – PFO (July 28-30, 2020)

Photo 38: Upland 60 (U-60) (July 28-30, 2020)

Photo 39: Wetland 61 (W-61) – PEM (July 28-30, 2020)

Photo 40: Upland 61 (U-61) (July 28-30, 2020)

Photo 42: Wetland 62 (W-62) – PEM (July 28-30, 2020)

(No Upland 62 Photo Available)

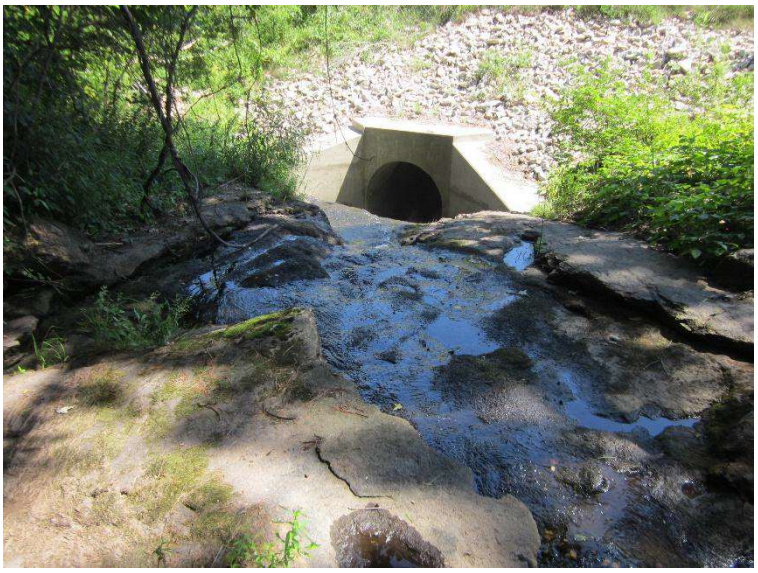


Photo 43: Patten Brook (S-10): Inlet

(June 22-26, 2020)

Photo 44: Patten Brook (S-10): Upstream

(June 22-26, 2020)

Photo 45: Patten Brook (S-10): Outlet

(June 22-26, 2020)

Photo 46: Patten Brook (S-10): Downstream

(June 22-26, 2020)

Photo 47: Stream 15 (S-15) – Inlet (obscured)

(June 22-26, 2020)

Photo 48: Stream 15 (S-15) – Upstream

(June 22-26, 2020)

Photo 49: Stream 11/15 (S-11) – Outlet

(June 22-26, 2020)

Photo 50: Stream 11 (S-11) – Downstream

(June 22-26, 2020)

Photo 51: Stream 13 (S-13) – Outlet from PUB wetland/Start of Stream

(June 22-26, 2020)

Photo 52: Stream 13 (S-13) – Facing downstream from outlet

(June 22-26, 2020)

Photo 53: Stream 13 (S-13) – Inlet

(June 22-26, 2020)

Photo 54: Stream 13 (S-13) – Facing downstream from outlet

(June 22-26, 2020)

Photo 55: Stream 15 (S-15) – Inlet

(June 22-26, 2020)

Photo 56: Stream 15 (S-15) – Upstream

(June 22-26, 2020)

Photo 57: Stream 15 (S-15) – Outlet

(June 22-26, 2020)

Photo 58: Stream 15 (S-15) – Downstream from Outlet

(June 22-26, 2020)

Photo 59: Stream 16 (S-16) – Outlet

(June 22-26, 2020)

Photo 60: Stream 16 (S-16) – Downstream from outlet

(June 22-26, 2020)

Photo 61: Stream 16 (S-16) – Intermittent

(June 22-26, 2020)

Photo 62: Stream 16 (S-16) – Before sheet flowing into W-49

(June 22-26, 2020)

Photo 63: Bowman Brook/Stream 17 (S-17) – Inlet

(June 22-26, 2020)

Photo 64: Bowman Brook/Stream 17(S-17) – Upstream

(June 22-26, 2020)

Photo 65: Bowman Brook/Stream 17 (S-17) – Outlet

(June 22-26, 2020)

Photo 66: Bowman Brook/Stream 17 (S-17) – Downstream

(June 22-26, 2020)

Photo 67: McQuesten Brook/Stream 18 (S-18) - Inlet

(July 28-30, 2020)

Photo 68: McQuesten Brook/Stream 18 (S-18) - Upstream

(July 28-30, 2020)

Photo 69: McQuesten Brook/Stream 18 (S-18) - Outlet

(July 28-30, 2020)

Photo 70: McQuesten Brook/Stream 18 (S-18) - Downstream

(July 28-30, 2020)

Photo 71: Stream 19 (S-19) – Outlet

(July 28-30, 2020)

Photo 72: Stream 19 (S-19) – Downstream

(July 28-30, 2020)

Photo 73: Stream 19, Inlet (S-19) – Confluence with Bowman Brook

(July 28-30, 2020)

Photo 74: Stream 20 (S-20) - Confluence with Bowman Brook

(July 28-30, 2020)

Photo 75: Stream 20 (S-20) – Intermittent, riprap lined channel

(July 28-30, 2020)

Photo 76: Stream 20 (S-20) – Intermittent, riprap lined channel

(July 28-30, 2020)

Photo 77: Stream 20 (S-20) – Intermittent, riprap lined channel

(July 28-30, 2020)

Photo 79: Stream 14 (S-14) – Intermittent

(July 28-30, 2020)

Photo 80: Stream 14 (S-14) – Intermittent

(July 28-30, 2020)

Photo 81: Stream 14 (S-14) – Near start of stream in W-47

(July 28-30, 2020)

Photo 82: Stream 14 (S-14) – Intermittent

(July 28-30, 2020)

Photo 83: Stream 12 (S-12) – Intermittent

(July 28-30, 2020)

Photo 84: Stream 12 (S-12) – Intermittent

(July 28-30, 2020)

Photo 85: Stream 12 (S-12) – Intermittent

(July 28-30, 2020)

Photo 86: Stream 12 (S-12) – Inlet

(December 2017)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E. Everett Turnpike (13761D) City/County: Bedford / Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-40

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope %: 3-5

Subregion (LRR or MLRA): LRR R Lat: 42°56'48.278"N Long: 71°28'12.804"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ? Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-40

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Robinia pseudoacacia*	70	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	70	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Elaeagnus umbellata*	5	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Solidago rugosa*	45	Yes	FAC
2. *Celastrus orbiculatus*	30	Yes	UPL
3. *Lonicera morrowii*	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Celastrus orbiculatus*	10	Yes	UPL
2.			
3.			
4.			
	10	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	45	x 3 =	135
FACU species	80	x 4 =	320
UPL species	45	x 5 =	225
Column Totals:	170 (A)		680 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-40

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/3	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 9

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx) Rock at 9"

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-40

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°56'47.863"N Long: 71°28'12.679"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PEM1/SS1E

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-40

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Fraxinus pennsylvanica*	7	Yes	FACW
2. *Cornus amomum*	1	No	FACW
3.			
4.			
5.			
6.			
7.			
	8	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Thelypteris palustris*	35	Yes	FACW
2. *Onoclea sensibilis*	10	No	FACW
3. *Lythrum salicaria*	7	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	52	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	7	x 1 =	7
FACW species	53	x 2 =	106
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		128 (B)

Prevalence Index = B/A = 1.97

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-40

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	97	10YR 3/4	3	C	M	Sandy	Distinct redox concentrations
4-12	2.5Y 4/2	85	10YR 3/6	15	C	M	Sandy	Prominent redox concentrations
12-18	10Y 6/1	80	10YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ? Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-42

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°56'52.594"N Long: 71°28'15.917"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-42

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus velutina*	12	No	UPL
2. *Acer rubrum*	20	Yes	FAC
3. *Pinus strobus*	60	Yes	FACU
4.			
5.			
6.			
7.			
	92	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Kalmia latifolia*	10	Yes	FACU
2. *Vaccinium corymbosum*	35	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	45	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Maianthemum canadense*	40	Yes	FACU
2. *Mitchella repens*	5	No	FACU
3. *Lysimachia borealis*	3	No	FAC
4. *Uvularia sessilifolia*	1	No	FACU
5. *Coptis trifolia*	7	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	56	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	42	x 2 =	84
FAC species	23	x 3 =	69
FACU species	116	x 4 =	464
UPL species	12	x 5 =	60
Column Totals:	193 (A)		677 (B)

Prevalence Index = B/A = 3.51

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-42

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 2.5/1	100					Loamy/Clayey	
3-13	10YR 5/6	95	7.5YR 4/6	5	C	M	Loamy/Clayey	Faint redox concentrations
13-18	10YR 5/4	90	7.5YR 4/6	10	C	M	Loamy/Clayey	Distinct redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-42

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°56'52.446"N Long: 71°28'16.108"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ? Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-42

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	75	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	10	Yes	FAC
2. *Vaccinium corymbosum*	15	Yes	FACW
3. *Ilex verticillata*	1	No	FACW
4.			
5.			
6.			
7.			
	26	=Total Cover	
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	16	x 2 =	32
FAC species	85	x 3 =	255
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	101 (A)		287 (B)

Prevalence Index = B/A = 2.84

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-42

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y 2.5/1	100					Loamy/Clayey	
10-16	2.5Y 4/2	90	5YR 3/4	10	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx) 4" of fibric/hemic organic material

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-44

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope %: 2-3

Subregion (LRR or MLRA): LRR R Lat: 42°56'58.843"N Long: 71°28'15.709"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-44

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	25	Yes	FACU
2. *Quercus rubra*	20	Yes	FACU
3. *Acer rubrum*	40	Yes	FAC
4.			
5.			
6.			
7.			
	85	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Carpinus caroliniana*	25	Yes	FAC
2. *Hamamelis virginiana*	5	No	FACU
3.			
4.			
5.			
6.			
7.			
	30	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex pensylvanica*	20	Yes	UPL
2. *Maianthemum canadense*	18	Yes	FACU
3. *Osmundastrum cinnamomeum*	12	Yes	FACW
4. *Uvularia sessilifolia*	3	No	FACU
5. *Celastrus orbiculatus*	3	No	UPL
6. *Toxicodendron radicans*	2	No	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	58	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Celastrus orbiculatus*	7	Yes	UPL
2.			
3.			
4.			
	7	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	12	x 2 =	24
FAC species	67	x 3 =	201
FACU species	71	x 4 =	284
UPL species	30	x 5 =	150
Column Totals:	180 (A)		659 (B)

Prevalence Index = B/A = 3.66

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-44

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Sandy	
4-18	10YR 4/3	100					Loamy/Clayey	

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-44

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'58.986"N Long: 71°28'15.507"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PFO

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ? Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes X	No	Depth (inches): 18
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-44

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2. *Pinus strobus*	5	No	FACU
3.			
4.			
5.			
6.			
7.			
	35	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	5	Yes	FAC
2. *??*			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus*	40	Yes	OBL
2. *Impatiens capensis*	5	No	FACW
3. *Onoclea sensibilis*	7	No	FACW
4. *Toxicodendron radicans*	10	No	FAC
5. *Berberis thunbergii*	5	No	FACU
6. *Celastrus orbiculatus*	3	No	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	70	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	12	x 2 =	24
FAC species	45	x 3 =	135
FACU species	10	x 4 =	40
UPL species	3	x 5 =	15
Column Totals:	110 (A)		254 (B)

Prevalence Index = B/A = 2.31

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-44

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 2.5/1	100					Loamy/Clayey	
2-14	10YR 3/1	85	7.5YR 3/4	15	C	PL/M	Sandy	Prominent redox concentrations
14-18	10YR 5/2	90	10YR 4/6	10	C	PL	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-45

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°56'59.648"N Long: 71°28'22.396"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-45

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	10	No	FACU
2. *Quercus rubra*	40	Yes	FACU
3. *Betula populifolia*	7	No	FAC
4.			
5.			
6.			
7.			
	57	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Populus grandidentata*	5	Yes	FACU
2. *Pinus strobus*	5	Yes	FACU
3. *Frangula alnus*	10	Yes	FAC
4. *Betula populifolia*	3	No	FAC
5.			
6.			
7.			
	23	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Plantago lanceolata*	20	Yes	FACU
2. *Dichanthelium clandestinum*	18	Yes	FACW
3. *Trifolium repens*	3	No	FACU
4. *Potentilla simplex*	15	Yes	FACU
5. *Quercus rubra*	1	No	FACU
6. *Taraxacum officinale*	5	No	FACU
7. *Juncus effusus*	2	No	OBL
8.			
9.			
10.			
11.			
12.			
	64	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	18	x 2 =	36
FAC species	20	x 3 =	60
FACU species	104	x 4 =	416
UPL species	0	x 5 =	0
Column Totals:	144 (A)		514 (B)

Prevalence Index = B/A = 3.57

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-45

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Loamy/Clayey	
6-13	2.5Y 5/3	90	7.5YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations
13-18	2.5Y 5/1	80	10YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-45

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'59.305"N Long: 71°28'22.933"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO1E

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-45

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	40	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	40	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	5	No	FAC
2. *Viburnum recognitum*	15	Yes	FAC
3. *Acer rubrum*	10	Yes	FAC
4.			
5.			
6.			
7.			
	30	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus*	15	Yes	OBL
2. *Osmundastrum cinnamomeum*	12	Yes	FACW
3. *Carex crinita*	5	No	OBL
4. *Carex lupulina*	10	Yes	OBL
5. *Onoclea sensibilis*	3	No	FACW
6. *Maianthemum canadense*	3	No	FACU
7. *Toxicodendron radicans*	5	No	FAC
8. *Frangula alnus*	1	No	FAC
9. *Thelypteris palustris*	5	No	FACW
10.			
11.			
12.			
	59	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	20	x 2 =	40
FAC species	76	x 3 =	228
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	129 (A)		310 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-45

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Loamy/Clayey	
3-5	10YR 4/2	85	7.5YR 3/4	15	C	M	Loamy/Clayey	Distinct redox concentrations
5-20	2.5Y 2.5/1	95	7.5YR 3/4	5	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ? Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-46

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope %: 3-5

Subregion (LRR or MLRA): LRR R Lat: 42°57'0.793"N Long: 71°28'23.136"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-46

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	70	Yes	FAC
2. *Pinus strobus*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Quercus rubra*	2	No	FACU
2. *Fraxinus americana*	10	Yes	FACU
3. *Quercus alba*	3	No	FACU
4. *Corylus cornuta*	2	No	FACU
5. *Hamamelis virginiana*	25	Yes	FACU
6. *Frangula alnus*	5	No	FAC
7. *Prunus serotina*	3	No	FACU
	50	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Osmundastrum cinnamomeum*	30	Yes	FACW
2. *Maianthemum canadense*	15	Yes	FACU
3. *Quercus rubra*	3	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	48	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	75	x 3 =	225
FACU species	83	x 4 =	332
UPL species	0	x 5 =	0
Column Totals:	188 (A)		617 (B)

Prevalence Index = B/A = 3.28

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

VEGETATION Continued – Use scientific names of plants. Sampling Point: U-46

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
8.			
9.			
10.			
11.			
12.			
13.			
14.			
	90	=Total Cover	
Sapling/Shrub Stratum			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
	50	=Total Cover	
Herb Stratum			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
	48	=Total Cover	
Woody Vine Stratum			
5.			
6.			
7.			
8.			
		=Total Cover	

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

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

SOIL

Sampling Point U-46

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 2.5/1	100					Loamy/Clayey	
2-7	7.5YR 3/3	100					Loamy/Clayey	
7-16	10YR 4/6	100					Loamy/Clayey	

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-46

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°57'0.983"N Long: 71°28'23.325"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-46

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	70	Yes	FAC
2. *Pinus strobus*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	20	Yes	FAC
2. *Acer rubrum*	5	No	FAC
3. *Quercus rubra*	2	No	FACU
4.			
5.			
6.			
7.			
	27	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Osmundastrum cinnamomeum*	25	Yes	FACW
2. *Thelypteris palustris*	18	Yes	FACW
3. *Frangula alnus*	2	No	FAC
4. *Maianthemum canadense*	2	No	FACU
5. *Toxicodendron radicans*	3	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	43	x 2 =	86
FAC species	100	x 3 =	300
FACU species	24	x 4 =	96
UPL species	0	x 5 =	0
Column Totals:	167 (A)		482 (B)

Prevalence Index = B/A = 2.89

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-46

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/2	95	7.5YR 3/4	5	C	M	Loamy/Clayey	Distinct redox concentrations
7-18	2.5Y 4/2	90	10YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-47

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°57'6.147"N Long: 71°28'20.177"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-47

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Solidago rugosa*	30	Yes	FAC
2. *Verbascum thapsus*	2	No	UPL
3. *Achillea millefolium*	12	No	FACU
4. *Phalaris arundinacea*	20	Yes	FACW
5. *Trifolium aureum*	3	No	UPL
6. *Vicia cracca*	5	No	UPL
7. *Agrostis stolonifera*	15	No	FACW
8.			
9.			
10.			
11.			
12.			
	87 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	30	x 3 =	90
FACU species	12	x 4 =	48
UPL species	10	x 5 =	50
Column Totals:	87 (A)		258 (B)

Prevalence Index = B/A = 2.97

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point U-47

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx) Ledge/Rock at 8"

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-47

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°57'6.531"N Long: 71°28'20.321"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PEM1E

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-47

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus bicolor*	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	65	Yes	FACW
2. *Agrostis stolonifera*	15	No	FACW
3. *Carex sp??*	7	No	
4. *Lythrum salicaria*	20	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	107	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	85	x 2 =	170
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	105 (A)		190 (B)

Prevalence Index = B/A = 1.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-47

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	90	7.5YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-48

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope %: 2-3

Subregion (LRR or MLRA): LRR R Lat: 42°57'0.789"N Long: 71°28'23.186"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-48

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	55	Yes	FACU
2. *Quercus velutina*	10	No	UPL
3. *Acer rubrum*	18	No	FAC
4. *Fraxinus americana*	7	No	FACU
5. *Quercus rubra*	5	No	FACU
6. *Betula papyrifera*	3	No	FACU
7.			
	98	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Viburnum acerifolium*	12	Yes	UPL
2. *Hamamelis virginiana*	40	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	52	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Maianthemum canadense*	20	Yes	FACU
2. *Mitchella repens*	18	Yes	FACU
3. *Viburnum acerifolium*	15	Yes	UPL
4. *Lysimachia borealis*	3	No	FAC
5. *Corylus cornuta*	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	61	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	21	x 3 =	63
FACU species	153	x 4 =	612
UPL species	37	x 5 =	185
Column Totals:	211 (A)		860 (B)

Prevalence Index = B/A = 4.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-48

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/2	100					Loamy/Clayey	
1-2	10YR 3/2	100					Loamy/Clayey	
2-18	10YR 3/3	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-48

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°57'0.975"N Long: 71°28'23.317"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- ? Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes X	No	Depth (inches): 16
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W-48

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	50	Yes	FAC
2. *Ulmus americana*	15	Yes	FACW
3. *Pinus strobus*	10	No	FACU
4.			
5.			
6.			
7.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	30	Yes	FAC
2. *Ulmus americana*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Symplocarpus foetidus*	55	Yes	OBL
2. *Athyrium angustum*	15	No	FAC
3. *Equisetum arvense*	5	No	FAC
4. *Osmundastrum cinnamomeum*	12	No	FACW
5. *Solidago rugosa*	2	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	89	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	47	x 2 =	94
FAC species	102	x 3 =	306
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	214 (A)		495 (B)

Prevalence Index = B/A = 2.31

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-48

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 2/1	100					Sandy	
15-18	10YR 4/1	93	7.5YR 3/4	7	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ? Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-49

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope, roadway embankment Local relief (concave, convex, none): convex Slope %: 5-10

Subregion (LRR or MLRA): LRR R Lat: 42°57'5.088"N Long: 71°28'24.53"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: U-49

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Festuca rubra*	35	Yes	FACU
2. *Plantago lanceolata*	12	Yes	FACU
3. *Achillea millefolium*	5	No	FACU
4. *Trifolium repens*	3	No	FACU
5. *Rumex acetosella*	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	60 (A)		240 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-49

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Loamy/Clayey	
4-10	10YR 3/3	100					Loamy/Clayey	
10-16	10YR 3/4	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: June 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-49

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°57'5.268"N Long: 71°28'24.227"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PEM1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ? Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes X	No	Depth (inches): 20
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 6

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-49

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Lythrum salicaria*	25	Yes	OBL
2. *Typha angustifolia*	10	No	OBL
3. *Onoclea sensibilis*	5	No	FACW
4. *Carex lurida*	3	No	OBL
5. *Dichanthelium clandestinum*	3	No	FACW
6. *Lotus corniculatus*	10	No	FACU
7. *Plantago major*	12	Yes	FACU
8. *Plantago lanceolata*	10	No	FACU
9. *Agrostis gigantea*	15	Yes	FACW
10. *Trifolium repens*	3	No	FACU
11.			
12.			
	96 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	38	x 1 =	38
FACW species	23	x 2 =	46
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	96 (A)		224 (B)

Prevalence Index = B/A = 2.33

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-49

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-22	10YR 2/1	93	7.5YR 3/4	7	C	PL	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-50

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'39.882"N Long: 71°28'17.753"W Datum:

Soil Map Unit Name: Windsor loamy sand, 8 to 15% slopes NWI classification: UPL

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-50

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*			FAC
2. *Rubus allegheniensis*	40	Yes	FACU
3. *Quercus alba*	3	No	FACU
4. *Quercus rubra*	7	No	FACU
5. *Hamamelis virginiana*	5	No	FACU
6.			
7.			
	55 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Lysimachia quadrifolia*	30	Yes	FACU
2. *Parthenocissus quinquefolia*	18	Yes	FACU
3. *Solidago rugosa*	5	No	FAC
4. *Solidago gigantea*	3	No	FACW
5. *Festuca rubra*	25	Yes	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	81 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	5	x 3 =	15
FACU species	128	x 4 =	512
UPL species	0	x 5 =	0
Column Totals:	136 (A)		533 (B)

Prevalence Index = B/A = 3.92

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-50

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/3	100					Loamy/Clayey	
2-7	10YR 4/3	100					Sandy	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx) Rock at 7" - Disturbed

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-50

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'39.827"N Long: 71°28'17.924"W Datum:

Soil Map Unit Name: Windsor loamy sand, 8-15% slopes NWI classification: PEM1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 16

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-50

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Acer rubrum*	3	No	FAC
2. *Salix bebbiana*	12	Yes	FACW
3. *Ulmus americana*	1	No	FACW
4. *Cornus amomum*	10	No	FACW
5. *Spiraea tomentosa*	5	No	FACW
6. *Alnus incana*	20	Yes	FACW
7.			
	51	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Dichanthelium clandestinum*	20	Yes	FACW
2. *Rubus hispidus*	5	No	FACW
3. *Solidago rugosa*	15	Yes	FAC
4. *Eutrochium maculatum*	7	No	OBL
5. *Onoclea sensibilis*	5	No	FACW
6. *Galium palustre*	5	No	OBL
7. *Symphyotrichum novae-angliae*	15	Yes	FACW
8.			
9.			
10.			
11.			
12.			
	72	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	12	x 1 =	12
FACW species	93	x 2 =	186
FAC species	23	x 3 =	69
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	128 (A)		267 (B)

Prevalence Index = B/A = 2.09

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-50

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					Loamy/Clayey	
2-18	10YR 4/2	60	7.5YR 4/6	15	C	M	Loamy/Clayey	Prominent redox concentrations
			10YR 2/1	25	C	M		Faint redox concentrations

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-51

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'46.421"N Long: 71°28'5.925"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-51

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula populifolia*	12	No	FAC
2. *Pinus strobus*	25	Yes	FACU
3. *Quercus alba*	30	Yes	FACU
4. *Quercus rubra*	20	Yes	FACU
5.			
6.			
7.			
	87	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Acer rubrum*	2	Yes	FAC
2. *Hamamelis virginiana*	3	Yes	FACU
3. *Frangula alnus*	5	Yes	FAC
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Osmundastrum cinnamomeum*	5	Yes	FACW
2. *Maianthemum canadense*	2	Yes	FACU
3. *Frangula alnus*	1	No	FAC
4. *Ilex verticillata*	2	Yes	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 44.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	7	x 2 =	14
FAC species	20	x 3 =	60
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	107 (A)		394 (B)

Prevalence Index = B/A = 3.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-51

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/3	100					Loamy/Clayey	
3-5	10YR 4/3	100					Loamy/Clayey	
5-9	2.5Y 2.5/1	100					Loamy/Clayey	
9-18	10YR 4/4	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-51

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'46.426"N Long: 71°28'5.767"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-51

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	40	Yes	FAC
2. *Cornus amomum*	18	Yes	FACW
3. *Acer rubrum*	5	No	FAC
4. *Ilex verticillata*	3	No	FACW
5.			
6.			
7.			
	66 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Onoclea sensibilis*	25	Yes	FACW
2. *Osmundastrum cinnamomeum*	7	Yes	FACW
3. *Solanum dulcamara*	2	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	34 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	53	x 2 =	106
FAC species	47	x 3 =	141
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		247 (B)

Prevalence Index = B/A = 2.47

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-51

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	90	10YR 3/4	10	C	M	Loamy/Clayey	Distinct redox concentrations
3-5	10YR 5/2	90	10YR 3/4	10	C	M	Sandy	Distinct redox concentrations
5-18	10YR 3/1	90	10YR 3/4	10	C	M	Loamy/Clayey	Distinct redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ? Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-52

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope %: 2-3

Subregion (LRR or MLRA): LRR R Lat: 42°56'48.38"N Long: 71°28'3.533"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-52

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	15	No	FACU
2. *Acer rubrum*	25	Yes	FAC
3. *Quercus rubra*	40	Yes	FACU
4.			
5.			
6.			
7.			
	80	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Hamamelis virginiana*	25	Yes	FACU
2. *Pinus strobus*	18	Yes	FACU
3. *Frangula alnus*	7	No	FAC
4.			
5.			
6.			
7.			
	50	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Maianthemum canadense*	5	Yes	FACU
2. *Pyrola americana*	10	Yes	FAC
3. *Acer rubrum*	1	No	FAC
4. *Frangula alnus*	3	No	FAC
5. *Quercus rubra*	2	No	FACU
6. *Lysimachia borealis*	1	No	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	22	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	47	x 3 =	141
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column Totals:	152 (A)		561 (B)

Prevalence Index = B/A = 3.69

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-52

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	2.5Y 2.5/1	100					Muck	
1-3	10YR 2/1	100					Loamy/Clayey	
3-5	5Y 3/2	100					Loamy/Clayey	
5-13	10YR 4/4	100					Loamy/Clayey	
13-18	2.5Y 5/3	90	10YR 4/6	10	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-52

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'50.528"N Long: 71°28'9.803"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO1E

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

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

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

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Standing water in the middle of the wetland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ? Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: W-52

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	50	Yes	FAC
2. *Pinus strobus*	10	No	FACU
3. *Quercus velutina*	12	No	UPL
4.			
5.			
6.			
7.			
	72	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Vaccinium corymbosum*	7	Yes	FACW
2. *Frangula alnus*	5	Yes	FAC
3. *Acer rubrum*	10	Yes	FAC
4.			
5.			
6.			
7.			
	22	=Total Cover	
Herb Stratum (Plot size: 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	7	x 2 =	14
FAC species	65	x 3 =	195
FACU species	10	x 4 =	40
UPL species	12	x 5 =	60
Column Totals:	94 (A)		309 (B)

Prevalence Index = B/A = 3.29

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-52

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 2.5/1	100					Muck	
2-4	10YR 2/2	100					Loamy/Clayey	
4-15	10YR 4/2	90	7.5YR 3/4	10	C	M	Loamy/Clayey	Distinct redox concentrations
15-18	2.5Y 5/2	90	10YR 4/6	10	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-53

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): convex Slope %: 2-3

Subregion (LRR or MLRA): LRR R Lat: 42°56'49.204"N Long: 71°28'5.924"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-53

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus velutina*	20	Yes	UPL
2. *Acer rubrum*	7	No	FAC
3. *Quercus alba*	10	No	FACU
4. *Quercus rubra*	45	Yes	FACU
5. *Pinus strobus*	3	No	FACU
6.			
7.			
	85	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Hamamelis virginiana*	40	Yes	FACU
2. *Acer rubrum*	30	Yes	FAC
3. *Pinus strobus*	5	No	FACU
4.			
5.			
6.			
7.			
	75	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Ilex verticillata*	7	Yes	FACW
2. *Viburnum acerifolium*	20	Yes	UPL
3. *Vaccinium angustifolium*	3	No	FACU
4. *Corylus cornuta*	1	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	31	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	7	x 2 =	14
FAC species	37	x 3 =	111
FACU species	107	x 4 =	428
UPL species	40	x 5 =	200
Column Totals:	191 (A)		753 (B)

Prevalence Index = B/A = 3.94

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-53

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					Sandy	
3-6	10YR 3/4	100					Sandy	
6-16	10YR 5/6	100					Sandy	

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F. E. Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-53

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°56'49.212"N Long: 71°28'5.616"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO1E

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

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

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

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Drainage pipe outlet to west contributes to hydrology, deposited sand/material in wetland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-53

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	20	Yes	FAC
2. *Pinus strobus*	20	Yes	FACU
3. *Quercus velutina*	40	Yes	UPL
4. *Betula populifolia*	10	No	FAC
5.			
6.			
7.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Vaccinium corymbosum*	10	No	FACW
2. *Acer rubrum*	45	Yes	FAC
3. *Frangula alnus*	7	No	FAC
4. *Quercus velutina*	5	No	UPL
5. *Quercus alba*	7	No	FACU
6.			
7.			
	74	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Acer rubrum*	5	Yes	FAC
2. *Vaccinium corymbosum*	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	87	x 3 =	261
FACU species	27	x 4 =	108
UPL species	45	x 5 =	225
Column Totals:	179 (A)		634 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-53

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 4/2	100					Sandy	
2-7	2.5Y 2.5/1	95	5YR 3/4	5	C	M	Loamy/Clayey	Prominent redox concentrations
7-8	5YR 3/2	100					Loamy/Clayey	
8-16	2.5Y 4/3	90	10YR 4/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-54

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'48.383"N Long: 71°28'3.485"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-54

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus tremuloides*	55	Yes	FACU
2. *Fraxinus pennsylvanica*	25	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	80	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Pinus strobus*	12	Yes	FACU
2. *Frangula alnus*	15	Yes	FAC
3. *Populus tremuloides*	30	Yes	FACU
4. *Quercus rubra*	3	No	FACU
5.			
6.			
7.			
	60	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Onoclea sensibilis*	10	Yes	FACW
2. *Solidago rugosa*	1	No	FAC
3. *Frangula alnus*	3	No	FAC
4. *Populus deltoides*	1	No	FAC
5. *Celastrus orbiculatus*	5	Yes	UPL
6. *Quercus rubra*	3	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	23	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Celastrus orbiculatus*	5	Yes	UPL
2.			
3.			
4.			
	5	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	20	x 3 =	60
FACU species	103	x 4 =	412
UPL species	10	x 5 =	50
Column Totals:	168 (A)		592 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-54

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/3	100					Loamy/Clayey	
15-18	10YR 4/2	100					Sandy	

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-54

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'48.61"N Long: 71°28'3.619"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PEM1E

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

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

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

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Drainage from outlet to west

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 6

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-54

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus amomum*	12	Yes	FACW
2. *Frangula alnus*	7	No	FAC
3. *Populus tremuloides*	20	Yes	FACU
4. *Elaeagnus umbellata*	10	Yes	UPL
5.			
6.			
7.			
	49	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex crinita*	35	Yes	OBL
2. *Osmunda spectabilis*	10	No	OBL
3. *Lythrum salicaria*	3	No	OBL
4. *Spiraea alba*	2	No	FACW
5. *Carex stricta*	3	No	OBL
6. *Juncus effusus*	2	No	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	55	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	53	x 1 =	53
FACW species	29	x 2 =	58
FAC species	7	x 3 =	21
FACU species	20	x 4 =	80
UPL species	10	x 5 =	50
Column Totals:	119 (A)		262 (B)

Prevalence Index = B/A = 2.20

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-54

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 5/3	85	7.5YR 4/6	15	C	M	Sandy	Prominent redox concentrations
2-8	2.5Y 3/1	90	10YR 3/6	10	C	M	Sandy	Prominent redox concentrations
8-16	2.5Y 5/2	80	10YR 4/6	20	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ? Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-55

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope %: 3-5

Subregion (LRR or MLRA): LRR R Lat: 42°56'54.776"N Long: 71°28'8.706"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: UPL

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: U-55

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Solidago rugosa*	35	Yes	FAC
2. *Grass sp*	30	Yes	
3. *Erigeron annuus*	3	No	FACU
4. *Rudbeckia hirta*	3	No	FACU
5. *Vicia cracca*	5	No	UPL
6. *Rubus hispidus*	10	No	FACW
7. *Galium mollugo*	5	No	FACU
8.			
9.			
10.			
11.			
12.			
	91 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	35	x 3 =	105
FACU species	11	x 4 =	44
UPL species	5	x 5 =	25
Column Totals:	61 (A)		194 (B)

Prevalence Index = B/A = 3.18

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-55

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100					Loamy/Clayey	
4-9	2.5Y 5/2	100					Sandy	
9-16	2.5Y 6/2	75	2.5Y 5/6	25	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-55

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'54.514"N Long: 71°28'8.702"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PEM1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- X Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes 0	No	Depth (inches):

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-55

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus amomum*	3	Yes	FACW
2. *Viburnum dentatum*	2	Yes	FAC
3. *Vaccinium corymbosum*	2	Yes	FACW
4.			
5.			
6.			
7.			
	7 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Thelypteris palustris*	40	Yes	FACW
2. *Typha angustifolia*	25	Yes	OBL
3. *Solidago rugosa*	12	No	FAC
4. *Euthamia graminifolia*	1	No	FAC
5. *Lythrum salicaria*	5	No	OBL
6. *Osmunda spectabilis*	2	No	OBL
7.			
8.			
9.			
10.			
11.			
12.			
	85 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	32	x 1 =	32
FACW species	45	x 2 =	90
FAC species	15	x 3 =	45
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	92 (A)		167 (B)

Prevalence Index = B/A = 1.82

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-55

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/2	100					Muck	
1-3	10YR 4/2	95	7.5YR 4/6	5	C	M	Sandy	Prominent redox concentrations
3-7	2.5Y 5/1	95	10YR 4/6	5	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx) Ledge at 7"

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-56

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°56'58.519"N Long: 71°28'29.038"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: UPL

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

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

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

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
roadway embankment, disturbed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-56

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	7	Yes	FACU
2. *Acer rubrum*	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	17	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Rhus copallinum*	25	Yes	UPL
2. *Spiraea alba*	15	Yes	FACW
3. *Acer rubrum*	12	Yes	FAC
4.			
5.			
6.			
7.			
	52	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Phalaris arundinacea*	60	Yes	FACW
2. *Securigera varia*	7	No	UPL
3. *Lysimachia terrestris*	5	No	OBL
4. *Solidago rugosa*	5	No	FAC
5. *Asclepias syriaca*	3	No	UPL
6. *Rhus copallinum*	5	No	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	85	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	75	x 2 =	150
FAC species	27	x 3 =	81
FACU species	7	x 4 =	28
UPL species	40	x 5 =	200
Column Totals:	154 (A)		464 (B)

Prevalence Index = B/A = 3.01

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point U-56

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx) Stone at 6"

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-56

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): drainage swale Local relief (concave, convex, none): concave Slope %: 2-3

Subregion (LRR or MLRA): LRR R Lat: 42°56'58.586"N Long: 71°28'28.926"W Datum:

Soil Map Unit Name: Udipsamments, nearly level NWI classification: PFO1E

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ? Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 15
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-56

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	15	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Acer rubrum*	12	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	12	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex stricta*	33	Yes	OBL
2. *Carex scoparia*	5	No	FACW
3. *Thelypteris palustris*	18	Yes	FACW
4. *Lysimachia terrestris*	10	No	OBL
5. *Lythrum salicaria*	3	No	OBL
6. *Equisetum arvense*	2	No	FAC
7. *Carex lurida*	3	No	OBL
8.			
9.			
10.			
11.			
12.			
	74	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	49	x 1 =	49
FACW species	23	x 2 =	46
FAC species	29	x 3 =	87
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	101 (A)		182 (B)

Prevalence Index = B/A = 1.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-56

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	90	7.5YR 3/4	10	C	M	Sandy	Prominent redox concentrations
2-9	2.5Y 5/2	85	7.5YR 4/6	15	C	M	Sandy	Prominent redox concentrations
9-16	2.5Y 5/1	85	7.5YR 4/6	15	C	M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ? Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-57

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°57'16.065"N Long: 71°28'23.455"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-57

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Carya ovata*	20	Yes	FACU
2. *Acer rubrum*	50	Yes	FAC
3. *Acer saccharinum*	20	Yes	FACW
4. *Ulmus americana*	3	No	FACW
5.			
6.			
7.			
	93	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	15	Yes	FAC
2. *Catalpa speciosa*	3	No	FACU
3. *Acer saccharinum*	5	No	FACW
4. *Fraxinus pennsylvanica*	3	No	FACW
5.			
6.			
7.			
	26	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Toxicodendron radicans*	30	Yes	FAC
2. *Onoclea sensibilis*	20	Yes	FACW
3. *Athyrium angustum*	5	No	FAC
4. *Frangula alnus*	5	No	FAC
5. *Quercus rubra*	2	No	FACU
6. *Celastrus orbiculatus*	5	No	UPL
7. *Smilax sp*	3	No	
8.			
9.			
10.			
11.			
12.			
	70	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	51	x 2 =	102
FAC species	105	x 3 =	315
FACU species	25	x 4 =	100
UPL species	5	x 5 =	25
Column Totals:	186 (A)		542 (B)

Prevalence Index = B/A = 2.91

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point U-57

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-19	10YR 3/3	100					Loamy/Clayey	
19-22	2.5Y 4/2	90	7.5YR 3/4	10	C	M	Sandy	Prominent redox concentrations

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-57

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°57'16.296"N Long: 71°28'23.694"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PFO1A

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

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

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

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Fringe terrace within floodplain of Bowman Brook

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 26
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 12

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-57

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	60	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus amomum*	7	Yes	FACW
2. *Ilex verticillata*	5	Yes	FACW
3. *Frangula alnus*	10	Yes	FAC
4.			
5.			
6.			
7.			
	22	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Onoclea sensibilis*	7	Yes	FACW
2. *Toxicodendron radicans*	3	No	FAC
3. *Boehmeria cylindrica*	3	No	OBL
4. *Oxalis stricta*	10	Yes	FACU
5. *Lycopus americanus*	5	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	28	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Celastrus orbiculatus*	5	Yes	UPL
2.			
3.			
4.			
	5	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	8	x 1 =	8
FACW species	19	x 2 =	38
FAC species	73	x 3 =	219
FACU species	10	x 4 =	40
UPL species	5	x 5 =	25
Column Totals:	115 (A)		330 (B)

Prevalence Index = B/A = 2.87

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-57

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	90	7.5YR 3/4	10	C	PL/M	Sandy	Prominent redox concentrations
5-7	2.5Y 5/2	85	5YR 3/4	15	C	M	Sandy	Prominent redox concentrations
7-18	10YR 3/1	93	7.5YR 3/4	7	C	PL/M	Sandy	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ? Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ? Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-58

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope %: 2-3

Subregion (LRR or MLRA): LRR R Lat: 42°57'16.408"N Long: 71°28'22.448"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-58

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	45	Yes	FACU
2. *Carya ovata*	10	No	FACU
3. *Fraxinus pennsylvanica*	5	No	FACW
4. *Tilia americana*	15	No	FACU
5. *Pinus strobus*	7	No	FACU
6.			
7.			
	82	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Onoclea sensibilis*	3	No	FACW
2. *Prunus serotina*	5	Yes	FACU
3. *Tsuga canadensis*	2	No	FACU
4. *Acer rubrum*	10	Yes	FAC
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Maianthemum canadense*	12	Yes	FACU
2. *Pinus strobus*	1	No	FACU
3. *Chimaphila maculata*	1	No	UPL
4. *Quercus rubra*	3	No	FACU
5. *Acer rubrum*	5	Yes	FAC
6. *Carex pensylvanica*	5	Yes	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	27	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	8	x 2 =	16
FAC species	15	x 3 =	45
FACU species	100	x 4 =	400
UPL species	6	x 5 =	30
Column Totals:	129 (A)		491 (B)

Prevalence Index = B/A = 3.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-58

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					Loamy/Clayey	
2-18	2.5Y 5/3	100					Sandy	
18-24	2.5Y 4/3	100					Loamy/Clayey	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-58

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope %: 2-3

Subregion (LRR or MLRA): LRR R Lat: 42°57'16.535"N Long: 71°28'21.968"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PFO1A

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-58

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	25	Yes	FACW
2. *Acer rubrum*	15	Yes	FAC
3. *Fraxinus pennsylvanica*	10	No	FACW
4. *Betula populifolia*	10	No	FAC
5.			
6.			
7.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Viburnum recognitum*	15	Yes	FAC
2. *Ilex verticillata*	7	No	FACW
3. Speckled Alder	10	Yes	
4. *Cornus amomum*	3	No	FACW
5. *Frangula alnus*	3	No	FAC
6. *Elaeagnus umbellata*	7	No	UPL
7.			
	45	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Dichanthelium clandestinum*	5	Yes	FACW
2. *Lycopus uniflorus*	3	Yes	OBL
3. *Cinna latifolia*	2	No	FACW
4. *Amorpha fruticosa*	1	No	FACW
5. *Quercus rubra*	1	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	12	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	53	x 2 =	106
FAC species	43	x 3 =	129
FACU species	1	x 4 =	4
UPL species	7	x 5 =	35
Column Totals:	107 (A)		277 (B)

Prevalence Index = B/A = 2.59

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-58

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	2.5Y 6/2	85	10YR 4/6	15	C	M	Sandy	Prominent redox concentrations
9-18	2.5Y 5/2	95	10YR 4/6	5	C	M	Sandy	Prominent redox concentrations

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-59

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope %: 25-30

Subregion (LRR or MLRA): LRR R Lat: 42°57'47.738"N Long: 71°28'35.964"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: UPL

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-59

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus rubra*	40	Yes	FACU
2. *Fraxinus americana*	25	Yes	FACU
3. *Carya ovata*	10	No	FACU
4.			
5.			
6.			
7.			
	75	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Carpinus caroliniana*	15	Yes	FAC
2. *Acer saccharum*	2	No	FACU
3. *Lonicera morrowii*	3	No	FACU
4.			
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Athyrium angustum*	12	Yes	FAC
2. *Osmundastrum cinnamomeum*	10	Yes	FACW
3. *Celastrus orbiculatus*	7	No	UPL
4. *Maianthemum canadense*	5	No	FACU
5. *Acer saccharum*	2	No	FACU
6. *Uvularia sessilifolia*	1	No	FACU
7. *Lonicera morrowii*	2	No	FACU
8.			
9.			
10.			
11.			
12.			
	39	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	27	x 3 =	81
FACU species	90	x 4 =	360
UPL species	7	x 5 =	35
Column Totals:	134 (A)		496 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point U-59

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/3	100					Loamy/Clayey	
7-15	10YR 4/4	100					Sandy	
15-18	2.5Y 5/4	100					Sandy	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-59

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°57'47.877"N Long: 71°28'35.704"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PFO1E

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Drains to outlet to McQuesten Brook

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:
Duckweed in Wetland

VEGETATION – Use scientific names of plants.

Sampling Point: W-59

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2. *Fraxinus pennsylvanica*	12	Yes	FACW
3. *Betula lenta*	15	Yes	FACU
4.			
5.			
6.			
7.			
	57	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Carpinus caroliniana*	20	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Impatiens capensis*	25	Yes	FACW
2. *Toxicodendron radicans*	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	35	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	37	x 2 =	74
FAC species	60	x 3 =	180
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	112 (A)		314 (B)

Prevalence Index = B/A = 2.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-59

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					Loamy/Clayey	
2-5	10YR 3/1	100					Sandy	
5-16	2.5Y 4/1	100					Sandy	

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
? Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-60

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope %: 3-5

Subregion (LRR or MLRA): LRR R Lat: 42°57'37.782"N Long: 71°28'33.198"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-60

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus serotina*	10	No	FACU
2. *Acer rubrum*	45	Yes	FAC
3. *Pinus resinosa*	18	Yes	FACU
4.			
5.			
6.			
7.			
	73	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Acer rubrum*	20	Yes	FAC
2. *Fraxinus pennsylvanica*	7	No	FACW
3. *Acer saccharum*	3	No	FACU
4. *Euonymus alatus*	10	Yes	UPL
5.			
6.			
7.			
	40	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Maianthemum canadense*	12	Yes	FACU
2. *Clintonia borealis*	5	Yes	FAC
3. *Frangula alnus*	3	No	FAC
4. *Acer saccharum*	2	No	FACU
5. *Acer rubrum*	3	No	FAC
6. *Prunus serotina*	2	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	27	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	7	x 2 =	14
FAC species	76	x 3 =	228
FACU species	47	x 4 =	188
UPL species	10	x 5 =	50
Column Totals:	140 (A)		480 (B)

Prevalence Index = B/A = 3.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-60

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/3	100					Loamy/Clayey	
2-11	2.5Y 5/4	100					Loamy/Clayey	
11-18	2.5Y 7/3	90	10YR 6/6	10	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
___ High Chroma Sands (S11) (**LRR K, L)**
___ Loamy Mucky Mineral (F1) (**LRR K, L**)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-60

Investigator(s): S. Hoffmann Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42°57'37.765"N Long: 71°28'33.004"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PFO1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- Microtopographic Relief (D4)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No	Depth (inches):
Water Table Present?	Yes	No	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No	Depth (inches):

Wetland Hydrology Present? **Yes** X **No**

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-60

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	70	Yes	FAC
2. *Ulmus americana*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ulmus americana*	10	No	FACW
2. *Acer rubrum*	30	Yes	FAC
3. *Frangula alnus*	20	Yes	FAC
4. *Apple*	5	No	
5. *Fraxinus pennsylvanica*	2	No	FACW
6. *Ligusticum sp*	3	No	
7.			
	70	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Osmunda spectabilis*	2	Yes	OBL
2. *Onoclea sensibilis*	3	Yes	FACW
3. *Cinna latifolia*	5	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Celastrus orbiculatus*	5	Yes	UPL
2.			
3.			
4.			
	5	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 87.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	40	x 2 =	80
FAC species	120	x 3 =	360
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	167 (A)		467 (B)

Prevalence Index = B/A = 2.80

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-60

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/2	100					Loamy/Clayey	
1-4	2.5Y 4/2	100					Loamy/Clayey	
4-8	2.5Y 4/2	85	10YR 4/6	15	C	M	Loamy/Clayey	Prominent redox concentrations
8-16	2.5Y 6/1	70	10YR 5/4	30	C	M	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: U-61

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°57'30.478"N Long: 71°28'30.954"W Datum:

Soil Map Unit Name: PEM1E NWI classification: UPL

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

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

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

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: U-61

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5')			
1. *Plantago lanceolata*	25	Yes	FACU
2. *Achillea millefolium*	5	No	FACU
3. *Lotus corniculatus*	30	Yes	FACU
4. *Trifolium repens*	10	No	FACU
5. *Agrostis gigantea*	7	No	FACW
6. *Ambrosia artemisiifolia*	3	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	80 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	7	x 2 =	14
FAC species	0	x 3 =	0
FACU species	73	x 4 =	292
UPL species	0	x 5 =	0
Column Totals:	80 (A)		306 (B)

Prevalence Index = B/A = 3.83

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

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

SOIL

Sampling Point U-61

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	90	7.5YR 3/4	10	C	M	Loamy/Clayey	Distinct redox concentrations
6-10	2.5Y 5/3	85	7.5YR 4/6	15	C	M	Sandy	Prominent redox concentrations
10-16	2.5Y 6/1	80	10YR 5/6	20	C	M	Mucky Loam/Clay	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ? Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

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

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: F.E Everett Turnpike (13761D) City/County: Bedford/Hillsborough Sampling Date: July 2020

Applicant/Owner: NHDOT State: NH Sampling Point: W-61

Investigator(s): S. Hoffmann Section, Township, Range:

Landform (hillside, terrace, etc.): swale, depression Local relief (concave, convex, none): concave Slope %: 1-2

Subregion (LRR or MLRA): LRR R Lat: 42°57'30.372"N Long: 71°28'31.138"W Datum:

Soil Map Unit Name: Suncook loamy fine sand NWI classification: PEM1E

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

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

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

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

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

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

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: W-61

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. *Frangula alnus*	10	Yes	FAC
2. *Viburnum recognitum*	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	15 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Agrostis gigantea*	65	Yes	FACW
2. *Carex scoparia*	10	No	FACW
3. *Lythrum salicaria*	3	No	OBL
4. *Trifolium repens*	15	No	FACU
5. *Prunella vulgaris*	3	No	FAC
6. *Lotus corniculatus*	5	No	FACU
7. *Plantago lanceolata*	5	No	FACU
8. *Onoclea sensibilis*	12	No	FACW
9. *Ranunculus sp*	20	Yes	
10.			
11.			
12.			
	138 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	87	x 2 =	174
FAC species	18	x 3 =	54
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	133 (A)		331 (B)

Prevalence Index = B/A = 2.49

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

_X_ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

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

SOIL

Sampling Point W-61

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	95	7.5YR 3/4	5	C	M	Loamy/Clayey	Prominent redox concentrations
2-16	2.5Y 5/1	75	10YR 4/6	25	C	M	Loamy/Clayey	Prominent redox concentrations

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

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ? Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks:

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

Wetland Function-Value Evaluation Form

Total area of wetland ~ 5.0 ac Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Transportation / Commercial Distance to nearest roadway or other development 50'

Dominant wetland systems present PSS/FO1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? N/A

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-33

Latitude 42.934984 Longitude -71.467650

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type PERM (Fill) / TEMP Area 346 SF P / 530 SF T

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2, 3, 5,		Underlain by an aquifer with stratified sand/gravel deposits, Transmissivity < 1,000 feet squared per day
Floodflow Alteration	Y	1, 3, 4, 5, 6, 7, 8, 9, 15, 18	X	Relatively large wetland area, ponding in PSS and evidence of ponded areas in PFO
Fish and Shellfish Habitat	N	2		There is no watercourse associated with W-33
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6, 8	X	The wetland is located in close proximity to the Turnpike, a potential source of sediment/toxicants
Nutrient Removal	Y	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	X	Wetland contains dense scrub-shrub veg, with ponded areas
Production Export	Y	1, 2, 4, 7, 8, 9, 12		Outflow is constricted, little transport occurs via wildlife and/or human export, wetland is attenuating nutrients
Sediment/Shoreline Stabilization	N			There is no watercourse associated with W-33
Wildlife Habitat	Y	5, 8, 9, 13, 14, 15, 19, 20, 21	X	Proximity to the Turnpike and surrounding development reduce the overall habitat quality
Recreation	N	5		The wetland is located adjacent to the Turnpike, access is limited
Educational/Scientific Value	N	5		Limited access, poor location, no known educational use
Uniqueness/Heritage	N	1, 6, 12, 13		Wetland is surrounded by development, multiple wetland classes present, limited access due to location
Visual Quality/Aesthetics	Y	1, 2, 3, 6, 8, 12		View of wetland from Turnpike, otherwise access is restricted
ES Endangered Species Habitat	N			No documented occurrences of T&E species in W-33
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.3 ac Human made? YES Is wetland part of a wildlife corridor? NO or a "habitat island"? NO

Adjacent land use Transportation / Residential Distance to nearest roadway or other development 40'

Dominant wetland systems present PEM1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? N/A

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-36

Latitude 42.936945 Longitude -71.468724

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type TEMPORARY Area 18 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N	2, 3, 5,		Small area, swale/drainage ditch
Floodflow Alteration	N	3, 4, 5,		Limited flood storage potential due to small size, drainage swale
Fish and Shellfish Habitat	N			No fish or shellfish habitat provided by W-36, not associated with a watercourse
Sediment/Toxicant Retention	Y	1, 2, 4, 6		A highway drainage outlet contributes to the hydrology of this area
Nutrient Removal	Y	3, 4, 9, 10		Receives highway drainage/runoff, provides some nutrient removal potential
Production Export	N			Wetland area is a small ditch/swale, does not provide usable products for humans or wildlife
Sediment/Shoreline Stabilization	N			No watercourse associated with the W-36
Wildlife Habitat	N			Wetland is located in a grass swale that is regularly mowed by highway maintenance
Recreation	N			Small size, proximity to highway, no recreation potential
Educational/Scientific Value	N			No educational or scientific value
Uniqueness/Heritage	N	1		Wetland is not unique, no historic sites
Visual Quality/Aesthetics	N			Wetland is a modified area located adjacent to the Turnpike, no visual quality/aesthetics
ES Endangered Species Habitat	N			No documented occurrences of T&E species in W-36
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.07 ac Human made? YES Is wetland part of a wildlife corridor? NO or a "habitat island"? NO

Adjacent land use Transportation / Residential Distance to nearest roadway or other development 60'

Dominant wetland systems present PFO1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? N/A

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-37

Latitude 42.938463 Longitude -71.468799

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type TEMPORARY Area 158 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N	2, 3, 5		Underlain by an aquifer with stratified sand/gravel deposits, Transmissivity < 1,000 feet squared per day
Floodflow Alteration	Y	3, 4, 5, 6, 7, 8, 9, 15		Relatively small size, depression with no outlet, evidence of ponding, minimal storage potential
Fish and Shellfish Habitat	N			There is no watercourse associated with W-37
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5	X	Drainage outlet present in wetland, receives potentially contaminated runoff from the Turnpike
Nutrient Removal	Y	3, 4, 7, 10		Relatively small depression, no outlet, vegetation is relatively sparse
Production Export	N	1		Wetland may provide some wildlife habitat/food sources, limited
Sediment/Shoreline Stabilization	N			There is no watercourse associated with W-37
Wildlife Habitat	Y	7, 8, 19, 21		Small isolated wetland surrounded by developed areas, limited wildlife habitat value
Recreation	N			Wetland is a small depression, located on private property/Turnpike ROW, limited access
Educational/Scientific Value	N			No educational or scientific value
Uniqueness/Heritage	N	1		Wetland is not unique, common wetland type, no historic sites
Visual Quality/Aesthetics	N			Wetland does not provide any visual quality
ES Endangered Species Habitat	N			No documented occurrences of T&E species in W-37
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.7 ac Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? NO

Adjacent land use Transportation / Commercial Distance to nearest roadway or other development 10'

Dominant wetland systems present PEM1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? N/A

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-41

Latitude 42.945877 Longitude -71.471909

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type TEMPORARY Area 5 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N	2, 3, 5		Underlain by an aquifer with stratified sand/gravel deposits, Transmissivity < 1,000 feet squared per day
Floodflow Alteration	N	3, 4, 5, 9, 18		Wetland provides minimal flood storage potential due to topography, relatively flat wet meadow
Fish and Shellfish Habitat	N			There is no watercourse associated with W-41
Sediment/Toxicant Retention	N	1, 4		The wetland is a wet meadow, a drainage ditch has been constructed along the edge of a parking lot
Nutrient Removal	Y	4, 7, 8, 9, 10, 11	X	Densely vegetated wet meadow, seasonally saturated
Production Export	N	1, 7, 12		Wetland provides some wildlife habitat value/food sources
Sediment/Shoreline Stabilization	N			There is no watercourse associated with W-41
Wildlife Habitat	Y	7, 8, 13, 14, 19, 21	X	Utility ROW corridor, close proximity to development and major roadways
Recreation	N	5		Wetland is on private property, limited access, surrounding development
Educational/Scientific Value	N	5, 8		Parking lot near wetland, private property, not high quality wetland for educational purposes
Uniqueness/Heritage	N	1, 9,		The wetland type is not unique, limited access
Visual Quality/Aesthetics	N	4, 6, 8, 9		Wetland is easily accessed but does not provide high visual quality/aesthetics
ES Endangered Species Habitat	N			None documented
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.03 ac Human made? YES Is wetland part of a wildlife corridor? NO or a "habitat island"? NO

Adjacent land use Transportation Distance to nearest roadway or other development 20'

Dominant wetland systems present PEM1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? N/A

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-43

Latitude 42.947904 Longitude -71.471536

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type PERM (Fill) Area 1,677 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N	2, 3, 5		Underlain by an aquifer with stratified sand/gravel deposits, Transmissivity < 1,000 feet squared per day
Floodflow Alteration	N	4, 5		Relatively small ditch wetland, minimal flood storage potential
Fish and Shellfish Habitat	N			There is no watercourse associated with W-43
Sediment/Toxicant Retention	Y	1, 4, 6		W-43 receives runoff from the adjacent roadway
Nutrient Removal	Y	3, 4, 7, 8, 9		Vegetated ditch wetland, provides potential for nutrient retention
Production Export	N	7, 12		Small, ditch wetland provides minimal production/export
Sediment/Shoreline Stabilization	N			There is no watercourse associated with W-43
Wildlife Habitat	N	13, 19		Small, ditch wetland adjacent to roadway, limited wildlife habitat
Recreation	N			Wetland is located within the right-of-way of the Turnpike, no access or recreational opportunities
Educational/Scientific Value	N			Disturbed wetland in ROW, no access
Uniqueness/Heritage	N	1		Wetland is not unique, disturbed area
Visual Quality/Aesthetics	N			Wetland is a small ditch, does not provide any visual quality
ES Endangered Species Habitat	N			None
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 2.0 Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Transportation Distance to nearest roadway or other development 50'

Dominant wetland systems present PFO1/EM1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? LOW

How many tributaries contribute to the wetland? _____ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-44

Latitude 42.949447 Longitude -71.471831

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type TEMPORARY Area 26 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2, 3, 5, 7		Underlain by an aquifer with stratified sand/gravel deposits, Transmissivity < 1,000 feet squared per day, Intermittent stream associated
Floodflow Alteration	Y	1, 3, 4, 5, 6, 7, 8, 9, 10, 13	X	Wetland is associated with an intermittent stream, large ponded area within wetland
Fish and Shellfish Habitat	Y	2, 4, 8, 10, 16, 17		Small intermittent stream provides potential habitat for small fish, none observed
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 16	X	Areas of ponded emergent marsh, surrounded by Turnpike and on ramp (potential sources)
Nutrient Removal	Y	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 13	X	Intermittent stream flows through PFO portion, impounded PEM area dense vegetation areas of open water
Production Export	N	1, 4, 7, 8, 10, 11		Outlet is somewhat constricted by culvert, some flushing occurs during high flows
Sediment/Shoreline Stabilization	Y	1, 2, 3, 4, 6, 7, 9, 12, 14	X	PFO wetland adjacent to intermittent stream, stabilizes banks/channel
Wildlife Habitat	Y	6, 8, 9, 10, 11, 13, 15, 19, 20, 21	X	Wetland has been previously disturbed, completely surrounded by the Turnpike and on ramps, hazards to wildlife crossing
Recreation	N			The wetland is surrounded by the Turnpike, no access, no recreational opportunities
Educational/Scientific Value	N	5		No access, previously disturbed, limited edu/sci value
Uniqueness/Heritage	N	1, 2, 4, 5, 7		Wetland is located within a busy interchange, no access, no historic sites or rare species present
Visual Quality/Aesthetics	N	6, 8		Wetland provides wildlife habitat but no access, polluted (litter), loud interstate in close proximity
ES Endangered Species Habitat	N			None documented
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.1 ac Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Transportation Distance to nearest roadway or other development 40'

Dominant wetland systems present PFO1/EM1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? LOW

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-45

Latitude 42.949651 Longitude -71.472823

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type TEMPORARY Area 94 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2, 3, 5, 7		Underlain by an aquifer with stratified sand/gravel deposits, Transmissivity < 1,000 feet squared per day, Intermittent stream associated
Floodflow Alteration	Y	3, 4, 5, 9, 10, 13, 15		Wetland located adjacent to intermittent stream, provides minimal flood storage
Fish and Shellfish Habitat	Y	2, 4, 8, 10, 16, 17		Small intermittent stream provides potential habitat for small fish, none observed
Sediment/Toxicant Retention	Y	1, 2, 4, 6, 10		Channelized flow through wetland via intermittent stream channel, minimal sediment retention potential
Nutrient Removal	Y	4, 5, 7, 8, 9, 10, 11		Channelize flow, some access to densely vegetated floodplain
Production Export	N	1, 7, 10, 11		Wetland is associated with an intermittent stream, some flushing occurs during high flows
Sediment/Shoreline Stabilization	Y	1, 2, 3, 4, 6, 7, 9, 12, 14	X	Densely vegetated wetland adjacent to intermittent stream provides stabilization
Wildlife Habitat	Y	8, 11, 13, 19, 20, 21		Relatively small size, locate within interchange, poor connectivity to other habitats
Recreation	N			The wetland is surrounded by the Turnpike, no access, no recreational opportunities
Educational/Scientific Value	N			No access, limited educational/scientific value
Uniqueness/Heritage	N	1, 2, 5		Wetland is a relatively small area that has been modified by the existing roadway construction
Visual Quality/Aesthetics	N	6		Limited visibility from roadway
ES Endangered Species Habitat	N			None
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.07 ac Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Transportation Distance to nearest roadway or other development 25'

Dominant wetland systems present PFO1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? N/A

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-46

Latitude 42.950301 Longitude -71.473091

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type PERM (Fill) / TEMP Area 572 SF P / 269 SF T

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2, 3, 5		Small isolated depression, no defined outlet/inlet
Floodflow Alteration	Y	3, 4, 5, 6, 7, 8, 9, 15	X	Relatively small area, isolated depression, minimal flood storage potential from surrounding uplands
Fish and Shellfish Habitat	N	1		There is no watercourse associated with W-46
Sediment/Toxicant Retention	Y	1, 2, 4, 5, 6		No outlet, long retention time, evidence of ponding (water staining) close proximity to roadway
Nutrient Removal	Y	3, 4, 5, 7		Close proximity to roadway, ponding, no outlet
Production Export	N			
Sediment/Shoreline Stabilization	N			There is no watercourse associated with W-46
Wildlife Habitat	N	7, 8		Wetland is relatively small, isolated depression, located within interchange area
Recreation	N			No access or recreational opportunities
Educational/Scientific Value	N			No access, small wetland, limited ed/sci potential
Uniqueness/Heritage	N	1		Adjacent to roadway development, no access, no rare species or historic sites
Visual Quality/Aesthetics	N			Wetland is not visible from roadway
ES Endangered Species Habitat	N			None documented
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 3.4 ac Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Transportation Distance to nearest roadway or other development 40'

Dominant wetland systems present PEM1/FO1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? LOW

How many tributaries contribute to the wetland? 2 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-47

Latitude 42.951414 Longitude -71.472403

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type TEMPORARY Area 1,302 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2, 3, 5, 7, 9		Large wetland area, 2 intermittent tributaries, constricted outlet at ponded area, underlain by stratified drift deposits
Floodflow Alteration	Y	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	X	Large wetland in broad flat depression, ponded areas, multiple tributaries
Fish and Shellfish Habitat	Y	2, 3, 4, 8, 10, 14 16, 17		2 small intermittent streams and a small ponded area capable of supporting fish populations, none observed
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 16	X	Large wetland, dense cattail marsh, diffuse flow, ponded/inundated areas, close proximity to roadways
Nutrient Removal	Y	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	X	Densely vegetated cattail marsh, diffuse flows, ponded areas at southern end of wetland
Production Export	Y	1, 4, 5, 7, 8, 10, 12		Provides some wildlife habitat/food sources, associated intermittent streams
Sediment/Shoreline Stabilization	Y	3, 4, 6, 7, 9, 12, 13, 14, 15		2 intermittent streams, densely vegetated banks provide stabilization
Wildlife Habitat	Y	8, 9,13, 15, 19, 20, 21		Wetland is located within the interchange area, surrounded by roadways
Recreation	N			Wetland is located within the highway interchange, no access
Educational/Scientific Value	N			No access
Uniqueness/Heritage	N	1, 2, 4, 5, 7, 13,17		Multiple wetland classes, relatively large wetland, disturbed by previous roadway construction and limited access
Visual Quality/Aesthetics	Y	1, 2, 6		No access, close proximity to the highway, provides contrast with surrounding development
ES Endangered Species Habitat	N			None documented
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 1.4 ac Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Transportation Distance to nearest roadway or other development 45'

Dominant wetland systems present PFO1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? MID

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-48

Latitude 42.950796 Longitude -71.473274

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type TEMPORARY Area 269 SF

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2, 3, 5, 7, 9, 10		Small intermittent stream originates in wetland, underlain by stratified drift, potential for wells in vicinity
Floodflow Alteration	Y	1, 3, 4, 5, 6, 7, 8, 9, 13, 15, 18	X	Ponded area in lowest part of depression, intermittent stream with constricted outlet (culvert)
Fish and Shellfish Habitat	N	2, 8, 17		Small intermittent stream originates in wetland, headwaters, does not support fish populations
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 8, 10, 12, 13	X	Close proximity to potential sources, dense vegetation, ponded areas in interior of wetland
Nutrient Removal	Y	1, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14	X	Dense vegetation, ponded area capable of retaining nutrients
Production Export	Y	1, 4, 5, 7, 8, 10, 11, 12		Intermittent stream flows out of wetland, wildlife food sources, limited economic value
Sediment/Shoreline Stabilization	N	2, 3, 5, 14		Small stream originates in wetland, adjacent wetland vegetation provides some bank stabilization
Wildlife Habitat	Y	7, 8, 11, 13, 14, 15, 19, 20, 21	X	Located within interchange area, surrounded by busy highways and ramps
Recreation	N			No access
Educational/Scientific Value	N	5		No access, located within highway interchange
Uniqueness/Heritage	N	1, 2, 5		No rare species, historic sites, wetland type is not unique
Visual Quality/Aesthetics	N	6		Not visible from roadway
ES Endangered Species Habitat	N			None documented
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 3.0 ac Human made? NO Is wetland part of a wildlife corridor? NO or a "habitat island"? YES

Adjacent land use Transportation Distance to nearest roadway or other development 40'

Dominant wetland systems present PEM1/FO1E Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? LOW

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. W-49

Latitude 42.952167 Longitude -71.473492

Prepared by: S. Hoffmann Date 11/06/2020

Wetland Impact:
Type PERM (Fill) / TEMP Area 6,976 SF P / 2,491 SF T

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	2, 3, 5, 7, 9		Large wetland area, 1 intermittent tributary, diffuse flow through wetland, underlain by stratified drift deposits
Floodflow Alteration	Y	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 18	X	Large wetland in broad flat depression, tributary with diffuse flow through wetland
Fish and Shellfish Habitat	N	2, 8, 10, 16, 17		Stream channel is discontinuous through wetland area, minimal fish habitat potential in intermittent stream
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 16	X	Large wetland, dense cattail marsh, diffuse flow, constricted outlet
Nutrient Removal	Y	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	X	Densely vegetated cattail marsh, diffuse flows, capable of nutrient uptake
Production Export	N	1, 7, 12		Wetland provides food sources for some wildlife, limited export potential
Sediment/Shoreline Stabilization	Y	3, 4, 6, 9, 15		Channel is discontinuous, portion of wetland along intermittent stream provides bank stabilization
Wildlife Habitat	Y	8, 11, 13, 19, 20, 21		Cattail marsh, located in highway interchange, minimal wildlife habitat value
Recreation	N			No access, within highway interchange
Educational/Scientific Value	N			No access
Uniqueness/Heritage	N	1, 2, 5, 13		Cattail marsh, fragmented/disturbed by existing development
Visual Quality/Aesthetics	Y	1, 2, 6		Visible from roadway, no access
ES Endangered Species Habitat	N			None documented
Other				

Notes:

* Refer to backup list of numbered considerations.

PREVIOUSLY DELINEATED WETLANDS (2016/2017) SUMMARY TABLE

Original Wetland ID	Wetland ID	Project Segment	Cowardin	Wetland Type	Hydrology Indicator	Hydric Soil Indicator	Vegetation			Functions & Values	NH Prime Wetland	Confirmed Vernal Pool (04/17/2017)
							Trees	Sapling/Shrub	Herb			
WNBSH002	W-1	SOUTHERN	PSS1E	Depression	A3		Pinus strobus, Acer rubrum	Frangula alnus	Osmunda cinnamomea, Toxicodendron radicans, Typha latifolia, Lythrum salicaria,	Sediment/Toxicant Retention, Nutrient Removal	Y	
WNBSH001	W-2	SOUTHERN	PEM1Ed/Eh, L2UBFh	Ditch, Impoundment/Resevoir	A1, A3, B7, D2		None	Frangula alnus, Salix sp.	Lythrum salicaria, Juncus effusus, Typha latifolia, Sparganium americanum, Carex stricta	Groundwater Recharge/Discharge, Floodflow Alteration, Fish and Shellfish Habitat, Sediment/Toxicant Retention, Nutrient Removal, Sediment/Shoreline Stabilization, Wildlife Habitat, Visual Quality/Aesthetics	Y	
ONBSH001	W-2	SOUTHERN	L2UBHh	Impoundment/Resevoir	A1, B13	N/A	None	None	None	Groundwater Recharge/Discharge, Floodflow Alteration, Fish and Shellfish Habitat, Sediment/Toxicant Retention, Nutrient Removal, Sediment/Shoreline Stabilization	Y	
WSBSH003	W-3	SOUTHERN	PFO1E	Forested Swamp	D2, D5	F3	Acer rubrum, Pinus strobus	None	Thelypteris palustris, Boehmeria cylindrica	Wildlife Habitat		
WSBSH001	W-4	SOUTHERN	PFO1E	Forested Swamp	A3	A11	Acer rubrum, Ulmus americana	Ilex verticillata, Lyonia ligustrina	Thelypteris palustris, Onoclea sensibilis, Carex stipata, Carex intumescens, Sagittaria latifolia	Sediment/Shoreline Stabilization	Y	
WSBSH002	W-5	SOUTHERN	PFO1E	Forested Swamp	C3, D2	F6	Pinus strobus, Acer rubrum, Fraxinus Pennsylvanica	Quercus rubra	Dennstaedtia punctilobula, Thelypteris noveboracensis, Osmunda cinnamomea	Sediment/Shoreline Stabilization, Wildlife Habitat		
WNBSH003	W-6	SOUTHERN	PFO1E	Forested Swamp	D2, D5		Acer rubrum, Pinus strobus	Acer rubrum	Osmunda cinnamomea	Wildlife Habitat		
WSBSH004	W-7	SOUTHERN	PFO1E	Forested Swamp	A2, A3, B5, C1	A4	Acer rubrum, Betula populifolia	Alnus incana	Impatiens capensis, Boehmeria cylindrica, Carex sp.	Sediment/Toxicant Retention, Nutrient Removal		
N/A	W-8	MIDDLE										
WSBSH017	W-9	MIDDLE	PSS1E	Shrub Swamp	A3, D2, D5	A1	Acer rubrum	Cephalanthus occidentalis, Ilex verticilata	Boehmeria cylindrica, Solanum dulcamara	Sediment/Toxicant Retention, Nutrient Removal, Floodflow Alteration, Wildlife Habitat		X
WNBSH004	W-10	MIDDLE	PFO1E	Forested Swamp	A3, B10		Acer rubrum	Ilex verticillata		Sediment/Toxicant Retention, Nutrient Removal		
WSBSH016	W-11	MIDDLE	PUBH	Open Water/Marsh	A1, A3, B7, D2		Acer rubrum	Spirea alba	Leersia oryzoides	Wildlife Habitat, Endangered Species Habitat, Groundwater Recharge/Discharge, Sediment/Shoreline Stabilization, Sediment/Toxicant Retention		X
N/A	W-12	MIDDLE										
WSBSH015	W-13	MIDDLE	PEM1E	Marsh	A3		None	None	Bidens frondosa, Leersia oryzoides	Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal		X
WSBSH014	W-14	MIDDLE	PFO1E	Vernal Pool	A3, B8, D2	A3	Acer rubrum	Vaccinium corymbosum, Ilex verticilata, Acer rubrum	None	Wildlife Habitat		X
WNBSH005	W-15	MIDDLE	PFO1E	Floodplain Swamp	D2, D5	F3	Acer rubrum, Pinus strobus	Lindera benzoin	Osmunda cinnamomea, Solidago rugosa, Maianthemum canadense	Sediment/Shoreline Stabilization		
WSBSH013	W-16	MIDDLE	PFO1E/EM1E	Forested Swamp	A3		Acer rubrum, Betula alleghaniensis, Tsuga canadensis	Acer rubrum, Ilex verticilata, Sambucus canadensis, Lindera benzoin	Impatiens capensis, Osmunda cinnamomea	Sediment/Shoreline Stabilization, Groundwater Recharge/Discharge, Floodflow Alteration		
WNBSH006	W-17	MIDDLE	PEM1E	Wet Meadow	A2, A3	F3	None	None	Carex sp., Typha latifolia, Grass spp.	Sediment/Toxicant Retention, Nutrient Removal		
WSBSH012	W-18	MIDDLE	PSS1E	Shrub Swamp	A3, D2		None	Acer rubrum, Ilex verticilata, Lyonia ligustrina, Lindera benzoin	Impatiens capensis, Onoclea sensibilis, Osmunda cinnamomea	Sediment/Shoreline Stabilization, Nutrient Removal		
WNBSH007	W-17	MIDDLE	PEM1E	Wet Meadow	A3	F3	None	None	Verbena hastata, Lythrum salicaria, Solidago rugosa, Carex lurida	Sediment/Toxicant Retention, Nutrient Removal		
WSBSH011	W-19	MIDDLE	PFO1E	Floodplain Swamp	A2,A3		Acer rubrum		Osmunda cinnamomea, Osmunda regalis	Sediment/Toxicant Retention, Nutrient Removal, Sediment/Shoreline Stabilization		
WSBSH010	W-20	MIDDLE	PEM1E/SS1E/FO1E	Wet Meadow/Shurb Swamp	A3	A11	Acer rubrum, Tsuga canadensis	Alnus incana, Cephalanthus occidentalis, Spirea alba	Osmunda cinnamomea, Osmunda regalis, Carex spp.,	Sediment/Toxicant Retention, Nutrient Removal, Wildlife Habitat		X
WNBSH008	W-21	MIDDLE	PEM1E/FO1E	Ditch				Find Datasheet				X
WNBSH009	W-22	MIDDLE	PFO1E	Depression	B9, B8, D2	F3	Acer rubrum, Ulmus americana	Acer rubrum	Parathelypteris simulata	Sediment/Toxicant Retention, Nutrient Removal, Wildlife Habitat		
WSBSH009	W-23	MIDDLE	PFO1E	Depression	A3, B9	A11	Acer rubrum		Carex spp., Parathelypteris simulata	Sediment/Toxicant Retention, Nutrient Removal		

Original Wetland ID	Wetland ID	Project Segment	Cowardin	Wetland Type	Hydrology Indicator	Hydric Soil Indicator	Vegetation			Functions & Values	NH Prime Wetland	Confirmed Vernal Pool (04/17/2017)
							Trees	Sapling/Shrub	Herb			
WNBSH010	W-24	MIDDLE	PFO1E	Depression/Vernal Pool	B8, D2	A11	Acer rubrum		Bidens frondosa, Polygonum careyi, Boehmeria cylindrica	Sediment/Toxicant Retention, Wildlife Habitat		
WSBSH008	W-25	MIDDLE	PSS1E	Shrub Swamp	A3, D2		Nyssa sylvatica, Quercus palustris, Acer rubrum	Ilex verticillata, Cephalanthus occidentalis, Acer rubrum	Typha latifolia, Lythrum salicaria	Sediment/Toxicant Retention, Nutrient Removal		
WNBSH011	W-26	MIDDLE	PFO1E/SS1E/EM1E	Forested/Shrub Swamp, Marsh	B10		Acer rubrum	Acer rubrum	Impatiens capensis, Lythrum salicaria, Onoclea sensibilis, Osmunda cinnamomea, Typha latifolia	Sediment/Toxicant Retention, Nutrient Removal		
WSBSH007	W-27	MIDDLE	PFO1E	Forested Swamp	D2		Acer rubrum, Betula nigra, Quercus rubra, Tsuga canadensis	None	Osmunda cinnamomea	Sediment/Toxicant Retention, Nutrient Removal		
WSBSH006	W-28	MIDDLE	PFO1E	Forested Swamp	D2, D5	F3	Acer rubrum	None	Osmunda cinnamomea, Parathelypteris simulata	Sediment/Toxicant Retention, Nutrient Removal, Wildlife Habitat		
WNBSH012	W-29	MIDDLE	PFO1E	Forested Swamp	A3		Acer rubrum	Acer rubrum, Pinus strobus	Carex stricta, Thelypteris palustris	Sediment/Shoreline Stabilization		
N/A	W-30	MIDDLE										
N/A	W-31	MIDDLE										
WSBSH005	W-32	MIDDLE	PEM1E/FO1E	Ditch/Forested Swamp	B10, D2	F3	Acer rubrum, Pinus strobus, Tsuga canadensis	Ilex verticillata	Typha latifolia, Phalaris arundinacea, Juncus effusus, Carex lurida	Sediment/Toxicant Retention, Nutrient Removal		
WNBSH013	**W-33**	**NORTHERN**	**PSS1E/FO1E/EM1E**	**Forested/Shrub Swamp**	**A3, B10, D2**	**F3**	**Acer rubrum, Quercus alba**	**Ilex verticilata, Vaccinium corymbosum, Lyonia ligustrina, Aronia melanocarpa, Chamaedaphne calyculata, Acer rubrum, Cephalanthus occidentalis**	**Osmunda cinnamomea, Typha latifolia, Lythrum salicaria, Scirpus cyperinus**	**Sediment/Toxicant Retention, Nutrient Removal, Wildlife Habitat, Visual Quality/Aesthetics**		
N/A	**W-34**	**NORTHERN**										
WSBSH019	**W-35**	**NORTHERN**	**PEM1E/FO1E**	**Forested Swamp/Ditch**	**B10, D2**	**F3**	**Acer rubrum**	**Ulmus americana, Frangula alnus, Quercus rubra, Pinus strobus**	**Osmunda cinnamomea, Osmunda regalis, Parathelypteris simulata, Acer rubrum, Maianthemum canadense**	**Sediment/Toxicant Retention, Nutrient Removal**		
WNBSH014	**W-36**	**NORTHERN**	**PEM1E**	**Wet Meadow**	**B10, D2**	**F6**	**None**	**None**	**Carex spp., Grass spp., Onoclea sensibilis**	**None**		
WNBSH015	**W-37**	**NORTHERN**	**PFO1E**	**Forested Swamp**	**D2, D5**		**Acer rubrum**	**None**	**Onoclea sensibilis, Thelypteris palustris**	**Sediment/Toxicant Retention, Nutrient Removal**		
WNBSH016	**W-38**	**NORTHERN**	**PFO1E**	**Floodplain Swamp**	**D2**	**F3**	**Acer rubrum , Quercus rubra**	**Hamamelis virginiana, Acer rubrum, Quercus rubra**	**Onoclea sensibilis, Thelypteris palustris, Thelypteris noveboracensis, Osmunda cinnamomea, Osmunda regalis, Celastrus orbiculatus, Toxicodendron radicans, Maianthemum canadense**	**Sediment/Shoreline Stabilization, Floodflow Alteration**		
N/A	**W-39**	**NORTHERN**										
WNBSH017	**W-40**	**NORTHERN**	**PEM1F/PUBH**	**Marsh**	**A1, A2, A3, D2**		**Acer rubrum**	**Ilex verticilata, Spirea alba**	**Typha latifolia, Nuphar sp., Verbena hastata, Lythrum salicaria**	**Sediment/Toxicant Retention, Nutrient Removal, Floodflow Alteration**		
WSBSH018	**W-41**	**NORTHERN**	**PEM1E**	**Ditch**	**A3**		**None**	**Acer rubrum, Frangula alnus**	**Typha latifolia, Lythrum salicaria, Onoclea sensibilis, Thelypteris palustris**	**Sediment/Toxicant Retention, Nutrient Removal**		
WNBSH018	**W-42**	**NORTHERN**	**PFO1E**	**Vernal Pool**	**A3, B9**		**Acer rubrum, Pinus strobus**	**Ilex verticilata, Cephalanthus occidentalis, Vaccinium corymbosum**	**None**	**Wildlife Habitat**		
WNBSH019	**W-43**	**NORTHERN**	**PEM1E**	**Ditch**	**A3**	**F3**	**None**	**None**	**Typha latifolia, Lythrum salicaria, Solidago rugosa**	**Limited: Sediment/Toxicant Retention, Nutrient Removal**		
WNBSH020	**W-44**	**NORTHERN**	**PFO1E**	**Forested Swamp**	**A3**	**F3**	**Acer rubrum**	**Ilex verticilata, Quercus rubra, Fraxinus pennsylvanica, Frangula alnus, Ostrya virginiana**	**Solidago rugosa, Maianthemum canadense, Onoclea sensibilis**	**Sediment/Shoreline Stabilization, Floodflow Alteration**		
N/A	**W-45**	**NORTHERN**										
N/A	**W-46**	**NORTHERN**										
WNBSH021	**W-47**	**NORTHERN**	**PEM1F/SS1E/FO1E**	**Forested/Shrub Swamp, Marsh**	**A3, C3**	**F6**	**Acer rubrum, Pinus strobus**	**Frangula alnus, Elaeagnus umbellata, Acer rubrum, Cephalanthus occidentalis**	**Typha latifolia, Onoclea sensibilis, Lythrum salicaria**	**Floodflow Alteration, Sediment/Toxicant Retention, Nutrient Removal**		
N/A	**W-48**	**NORTHERN**										
N/A	**W-49**	**NORTHERN**										

NHB DataCheck Results Letter

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Stephen Hoffmann
53 Regional Drive
Concord, NH 03301

From: Amy Lamb, NH Natural Heritage Bureau
Date: 9/17/2020 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB20-2699 Town: Bedford Location: ROW
Description: The NHDOT 13761D project involves roadway widening and associated roadway improvements along a section of the F.E. Everett Turnpike in Bedford, NH. The proposed project begins approximately 1.0 mile north of the Bedford Toll Plaza and continues north for approximately 2.5 miles to the Bedford-Manchester Town Line. The project area also includes the majority of the NH Route 101 / I-293 (F.E. Everett Turnpike) Interchange area.

cc: Kim Tuttle

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

Comments: Wright's spikesedge was documented growing on a sandbar in the Merrimack River. River birch was documented growing on an island in the Merrimack River, but could potentially occur elsewhere along shorelines as well. Sessile-fruited arrowhead was documented (historically) along the bank of the Merrimack River. NHB recommends completing an analysis to determine whether appropriate habitat exists within the project area, and completing surveys anywhere there are potential habitat impacts.

This site is within an area flagged for possible impacts on the state-listed *Alasmidonta varicosa* (brook floater) in the Merrimack River. Please contact the NH Fish & Game Department to address wildlife concerns.

Invertebrate Species	**State[1]**	**Federal**	**Notes**
Brook Floater (*Alasmidonta varicosa*)	E	--	Contact the NH Fish & Game Dept (see below).

Plant species	**State[1]**	**Federal**	**Notes**
river birch (*Betula nigra*)*	T	--	The population could be deleteriously affected by any project activities that alter the hydrology of its habitat, by increased sedimentation, and by increased nutrients/pollutants in stormwater runoff.
sessile-fruited arrowhead (*Sagittaria rigida*)*	E	--	Primarily vulnerable to changes to the hydrology of its habitat, especially alterations that change water levels. It may also be susceptible to increased pollutants and nutrients carried in stormwater runoff.
Wright's spikesedge (*Eleocharis diandra*)	E	--	Primarily vulnerable to changes to the hydrology of its wetland habitat, especially alterations that change water levels. It may also be susceptible to increased pollutants

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

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Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

and nutrients carried in stormwater runoff.

Vertebrate species	State[1]	Federal	Notes
American Eel (*Anguilla rostrata*)	SC	--	Contact the NH Fish & Game Dept (see below).
Bald Eagle (*Haliaeetus leucocephalus*)	SC	T	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).
Eastern Hognose Snake (*Heterodon platirhinos*)*	E	--	Contact the NH Fish & Game Dept (see below).
Peregrine Falcon (*Falco peregrinus anatum*)	T	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	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.

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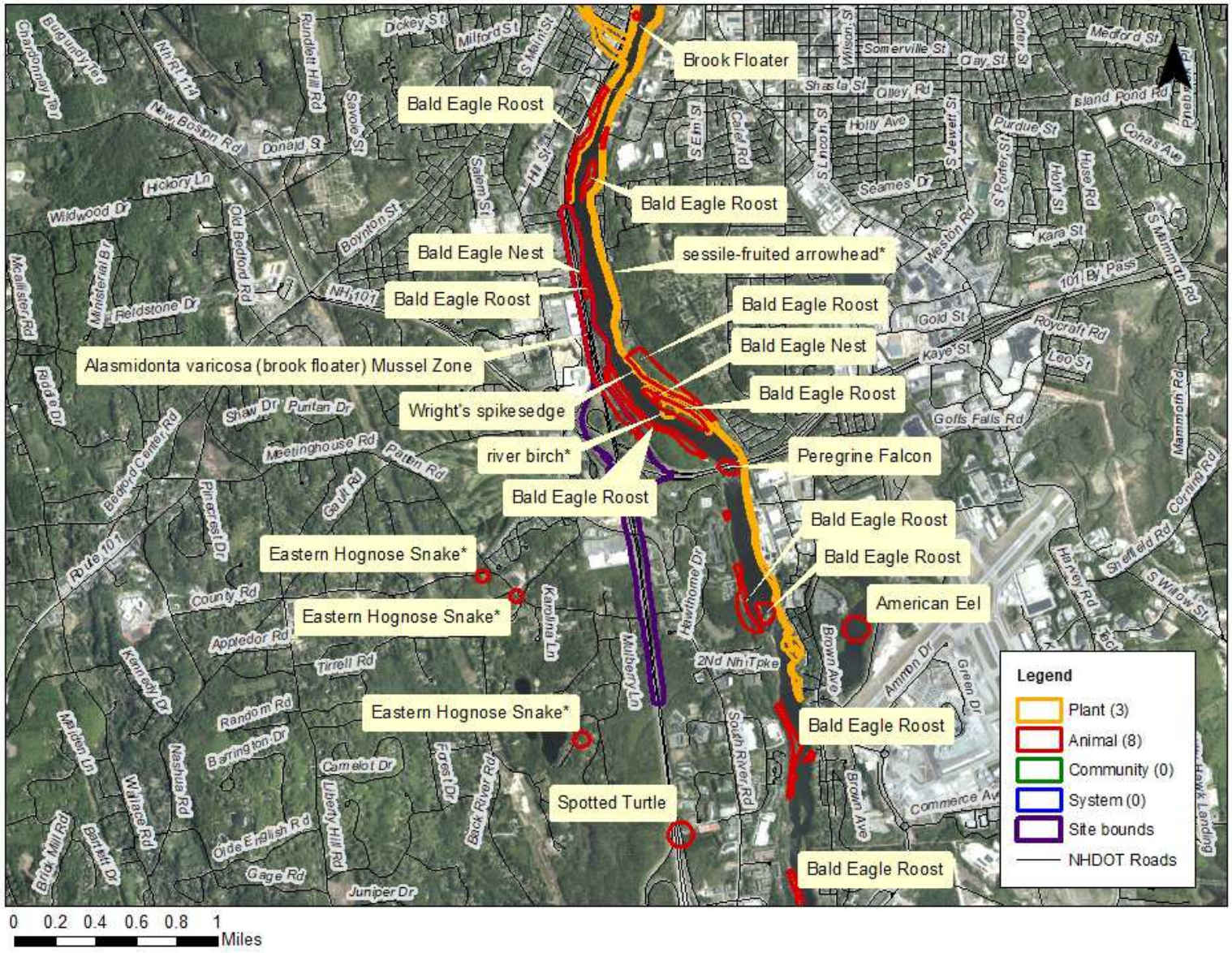
NHB20-2699



New Hampshire Natural Heritage Bureau - Animal Record

Brook Floater (*Alasmidonta varicosa*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Rare or uncommon
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	--
Detailed Description:	2004: 1 adult (Obs_id 2118A). 2 adults (Obs_id 2118B). 1 adult gravid female, 1 adult male (Obs_id 2118C). 1 adult (Obs_id 2118D).
General Area:	2004: Freshwater - stream or river (Obs_id 2118).
General Comments:	--
Management Comments:	--

Location

Survey Site Name: Granite Street Bridge
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 1.9 acres Elevation:

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

Directions: 2004: West shore, 2/3 of the way from Granite St. to Bridge St. (Obs_id 2118A). West shore, just downstream from Bridge St. (Obs_id 2118B). East shore, under Granite St. Bridge (Obs_id 2118C). West shore, old railroad bridge site; release location (Obs_id 2118D).

Dates documented

First reported: 2004-05-27 Last reported: 2004-05-29

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 - Plant Record

river birch (*Betula nigra*)

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:	1992: Population located on the north tip of Carthagina Island. Some trees as large as 12 inches DBH (age unknown). 1909: Batchelder specimen at GH.
General Area:	1992: The island supports a mature mixed hardwood-conifer forest which is best characterized as high floodplain forest. Some very tall and large trees were observed in this forest. Tree species observed include *Betula nigra*, *Acer saccharum*, *Acer rubrum*, A. saccarinum, Fraxinus pensylvanica, *Quercus rubra*, Q. alba, Pinus strubus and *Tsuga canadensis*.
General Comments:	This is the only known location along this stretch of the Merrimack River where this tree species was found to be growing larger than sapling size.
Management Comments:	--

Location

Survey Site Name:	Carthagina Island		
Managed By:	DOT - Carthagina Island		
County:	Hillsborough		
Town(s):	Bedford		
Size:	2.8 acres	Elevation:	

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

Directions: Merrimack River corridor, Carthagina Island.

Dates documented

First reported:	1909	Last reported:	1992

New Hampshire Natural Heritage Bureau - Plant Record

sessile-fruited arrowhead (*Sagittaria rigida*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Endangered	State:	Not ranked (need more information)

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 1896: Specimen collected.
General Area: 1896: River bank.
General Comments: --
Management Comments: --

Location

Survey Site Name: Manchester
Managed By: Piscataquog River Park - Undeveloped Area

County: Hillsborough
Town(s): Manchester
Size: 254.8 acres
Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: Manchester City river bank.

Dates documented

First reported: 1896-08-28 Last reported: 1896-08-28

New Hampshire Natural Heritage Bureau - Plant Record

Wright's spikesedge (*Eleocharis diandra*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Imperiled due to rarity or vulnerability
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2016: 19 plants in 1x10 meter area.
General Area: 2016: Plants growing on lowest exposed elevations at the downstream end of an exposed sand bar in silty substrate on the east side of the river. A side channel separates the sand bar from the main shore during higher water. Plants growing between more robust vegetation and the waterÆs edge. Substrate may be subject to wave action from wind and occasional boat traffic, as well as occasional foot and ATV traffic. Associated species include nodding beggar-ticks (*Bidens cernua*), bulblet umbrella sedge (*Cyperus dentatus*), two stamens umbrella sedge (*Cyperus diandrus*), red-root umbrella sedge (*Cyperus erythrorhizos*), incurved umbrella sedge (*Cyperus squarrosus*), straw-colored umbrella sedge (*Cyperus strigosus*), needle spikesedge (*Eleocharis acicularis*), blunt spikesedge (*Eleocharis obtusa* var. *obtusa*), tufted lovegrass (*Eragrostis pectinacea*), India lovegrass (*Eragrostis pilosa*), short-tailed rush (*Juncus brevicaudatus*), Canada rush (*Juncus canadensis*), rice cut grass (*Leersia oryzoides*), red lobelia (*Lobelia cardinalis*), common water-primrose (*Ludwigia palustris*), purple loosestrife (*Lythrum salicaria*), fall panicgrass (*Panicum dichotomiflorum* var. *dichotomiflorum*), and forked bluecurls (*Trichostema dichotomum*).
General Comments: --
Management Comments: --

Location

Survey Site Name: Merrimack River, north of Carthagina Island
Managed By:

County: Hillsborough
Town(s): Manchester
Size: .4 acres Elevation:

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

Directions: 2016: [Eastern shore of Merrimack River, north of Carthagina Island, Manchester].

Dates documented

First reported: 2016-10-11 Last reported: 2016-10-16

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: 2001: Area 13277M: 7 observed on 5/30. 15 observed on 8/23.
General Area: --
General Comments: --
Management Comments: --

Location

Survey Site Name: Cohas Brook
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 7.7 acres
Elevation:

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

Directions: 2001: Pine Island Pond

Dates documented

First reported: 2001-05-30 Last reported: 2001-08-23

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

Bald Eagle (*Haliaeetus leucocephalus*)

Legal Status		Conservation Status	
Federal:	Listed Threatened	Global:	Demonstrably widespread, abundant, and secure
State:	Special Concern	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2002-2012: Wintering eagles regularly observed at locations along the Merrimack River, day perching and night roosts:2012: Solitary eagles observed at 2 separate locations on 1/7. Solitary eagles observed at 2 separate locations on 1/31. 2 eagles observed at a single location on 2/7. 1 eagle observed on 2/9. Solitary eagles observed at 3 separate locations on 2/25.2011: 3 eagles observed at a single location and 2 at a separate location on 1/8. 1 eagle observed on 1/9. 1 eagle observed on 1/11. 1 eagle observed on 1/13. 2 eagles observed at a single location on 2/7. 1 eagle observed on 2/9. 1 eagle observed on 2/15. 1 eagle observed on 2/17. 1 eagle observed on 2/22. 1 eagle observed on 3/2. 4 eagles observed at a single location, 2 eagles at 2 separate locations, and a soliltary eagle observed on 2/26. 1 eagle observed on 12/13. 1 eagle observed on 12/15. 2010: 7 eagles observed at a single location, 4 eagles at a single location, 2 eagles at a single location, and solitary eagles at 6 locations on 1/9. Solitary eagles at 2 separate locations on 2/28. 1 eagle observed on 12/17. 1 eagle observed on 12/20. 1 eagle observed on 12/22. 1 eagle observed on 12/30.2009: 4 eagles observed at a single location, 2 eagles observed at 2 separate locations, and solitary eagles at 5 separate locations on 1/10. 4 eagles observed at a single location, and 2 eagles located at 4 separate locations on 2/28.2008: 3 eagles observed at a single location, 2 eagles at a single location, and solitary eagles at 2 separate locations on 1/12. 2 eagles observed at a single location and 1 at a separate location on 2/23.2007: 6 eagles observed at a single location, 2 eagles at a single location, and solitary eagles at 2 separate locations on 2/24.2006: 3 eagles observed at 3 separate locations, 2 eagles at 3 separate locations, and solitary eagles at 7 separate locations on 1/7. 2 eagles observed at a single location and 1 at a separate location on 2/18. 6 eagles observed at a single location, 3 at a single location, 2 eagles at 2 separate locations, and a solitary eagle at 1 location on 2/25.2005: Solitary eagles observed at 6 separate locations on 1/8. 1 eagle observed on 1/10. 12 eagles observed at a single location, 5 eagles at a single location, and 3 eagles at 2 separate locations on 2/4. 5 eagles observed at a single location, 3 eagles at a single location, and solitary eagles at 4 separate locations on 2/26.2004: Solitary eagles observed at 6 separate locations on 1/10. 1 eagle observed on 12/20.2003: 4 locations with 2 eagles observed on 1 location with a single eagle on 1/9. 2 eagles at a single location on 1/11. 1 eagle observed on 1/31. 4 eagles at a single location on 2/1. 5 eagles at one location and 2 at another location on 2/2. 9 eagles at a single location on 2/28. 3 eagles at a single location, 2 eagles at 2 separate locations, and 1 eagle at 2 separate locations on 3/1.2002: 2 eagles observed at separate locations on 1/12. Observations of 2 and 3 eagles at 2 separate locations on 12/22.1993: Near Amoskeag Bridge, suspected roosting behind the Youth Center, perching on north side of bridge. Perching on Amoskeag Islands. Some sightings near mouth of Piscataquog River. Also roosting behind Caldor's, NSS Corporation. Confirmed roosting at Sebbins Brook between Rte 3 and the river. Also at Reed's Ferry islands, Pennichuck Brook, all the way south to the Nashua River. 1991: Consistent perching near Amoskeag Bridge, between Queen City bridge and 101/283. Roosting behind Youth Development Center north of Amoskeag Bridge.
General Area: Eagles perch, sometimes roost in large white pines along the riverbank.
General Comments: --
Management Comments: --

Location

CONFIDENTIAL – NH Dept. of Environmental Services review

Survey Site Name: Lower Merrimack River
Managed By: Smiths Ferry Heritage Park

County: Hillsborough
Town(s): Manchester
Size: 116.0 acres Elevation:

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

Directions: Various locations along the banks of the Merrimack River.

Dates documented

First reported: 198? Last reported: 2012-02-25

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

New Hampshire Natural Heritage Bureau - Animal Record

Bald Eagle (*Haliaeetus leucocephalus*)

Legal Status		Conservation Status	
Federal:	Listed Threatened	Global:	Demonstrably widespread, abundant, and secure
State:	Special Concern	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	--
Detailed Description:	2018: Nest 2: 2 chicks fledged. 2017: Nest 1: 2 chicks fledged. 2016: Nest 1: 3 chicks fledged. 2015: Nest 1: 2 chicks fledged. 2014: Nest 1: 2 chicks fledged. 2013: Nest 1: 2 chicks fledged. 2012: Nest 1: Nest active, no chicks fledged.
General Area:	--
General Comments:	--
Management Comments:	--

Location

Survey Site Name:	Carthagina Island
Managed By:	DOT - Carthagina Island
County:	Hillsborough
Town(s):	Bedford
Size:	.9 acres
Elevation:	

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

Directions: --

Dates documented

First reported:	2012	Last reported:	2018

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

New Hampshire Natural Heritage Bureau - Animal Record

Eastern Hognose Snake (*Heterodon platirhinos*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: Unknown Date: 1 adult seen. The third hognose found at this location (Obs_id 310). 2001: Area 12039: 1 observed.1985: 1 individual, 27.8 inches in length (Area 1).
General Area: 2001: Area 12039: Residential property.
General Comments: --
Management Comments: --

Location

Survey Site Name: Sebbins Pond Vicinity
Managed By:

County: Hillsborough
Town(s): Bedford
Size: 6.7 acres Elevation:

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

Directions: 2001: Area 12039: County Road near Back River Road, Bedford.Sebbins Pond Road. East of road, ca. 0.5 mile from road's end (Area 1). Near a house, on County Road 0.25 mile north of Back River Road. West side of road (Obs_id 310).

Dates documented

First reported: 1985-05-15 Last reported: 1985-05-15

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

Peregrine Falcon (*Falco peregrinus anatum*)

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

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2018: Nest 2: 3 chicks fledged.
2017: Nest 1: Nest active, no chicks fledged.
General Area: --
General Comments: --
Management Comments: --

Location

Survey Site Name: I-293/101 Bridge
Managed By:

County: Hillsborough
Town(s): Bedford
Size: 3.3 acres Elevation:

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

Directions: 2017: I-295 / Route 101 bridge over Merrimack River in Manchester and Bedford.

Dates documented

First reported: 2017 Last reported: 2018

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: 2004: 1 seen, dead on road. Adult. (Obs_id 2004.0122).
General Area: --
General Comments: 2004: Roadkill (Obs_id 2004.0122).
Management Comments: --

Location

Survey Site Name: Stebbins Brook
Managed By: Reeds Ferry State Forest

County: Hillsborough
Town(s): Bedford
Size: 7.7 acres
Elevation:

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

Directions: 2004: Approximately where Stebbins Brook crosses Everett Turnpike (Obs_id 2004.0122).

Dates documented

First reported:	2004-07-07	Last reported:	2004-07-07

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.

NHB Correspondence

Christine J. Perron

From: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Sent: Monday, September 30, 2019 4:50 PM
To: Christine J. Perron
Subject: Re: Nashua-Merrimack-Bedford, 13761, northern segment rare plant survey

Thanks Christine!

Best,
Amy

_____
From: Christine J. Perron <CPerron@mjinc.com>
Sent: Monday, September 30, 2019 4:00:32 PM
To: Lamb, Amy
Subject: RE: Nashua-Merrimack-Bedford, 13761, northern segment rare plant survey

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

HI Amy,

According to Steve's field notes, the powerline ROW contained a mix of Oriental bittersweet, Virginia creeper, hay-scented fern, staghorn sumac, gray birch, red oak, raspberry, and blackberry.

Christine

-----Original Message-----
From: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Sent: Monday, September 30, 2019 2:15 PM
To: Christine J. Perron <CPerron@mjinc.com>
Subject: Re: Nashua-Merrimack-Bedford, 13761, northern segment rare plant survey

Hi Christine,

Thanks for checking in! I did receive the report, thank you for sending. Since reference populations of the plant species to be surveyed were visited prior to surveying the project area, I am confident that the survey team would be likely to find any rare plants within the project area.

I did have one follow-up question: the list of plant species provided refers to species common along the roadside. Did you see a different species assemblage within the utility ROW as well, or was it relatively consistent between the two habitats?

Happy fall to you too,
Amy

_____
From: Christine J. Perron <CPerron@mjinc.com>
Sent: Wednesday, September 25, 2019 8:59:52 AM
To: Lamb, Amy
Subject: RE: Nashua-Merrimack-Bedford, 13761, northern segment rare plant survey

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

_____

Hi Amy,

Happy Autumn! I just wanted to check in to make sure you received this and to see if any follow up is necessary for NHB18-0238.

Thanks,
Christine

Christine Perron, CWS
Project Manager * Senior Environmental Analyst McFarland Johnson
53 Regional Drive * Concord, NH 03301
OFFICE: 603-225-2978 ext. 1280
https://urldefense.com/v3/__http://www.mjinc.com__;!eeWmBe9sc1cuNw!HjoVUWjD1ILixRaRbvDwdEJdBShzVHyVo96ggpAyWP19RLuB720GHJMND4AbjnDNNRA$
<https://urldefense.com/v3/__http://www.mjinc.com/__;!eeWmBe9sc1cuNw!BQ8tKFRfaa6KuQWGKnTN8q6gKtyeIYQsbSGBeLvKAkWs6boB-Xow2d7c_ocUd0mliaY$>

From: Christine J. Perron
Sent: Friday, August 23, 2019 7:39 AM
To: Amy Lamb <amy.lamb@dncr.nh.gov>
Cc: Jon Evans <Jonathan.Evans@dot.nh.gov>; Jed S. Merrow <jmerrow@mjinc.com>
Subject: Nashua-Merrimack-Bedford, 13761, northern segment rare plant survey

Good morning Amy,

McFarland Johnson recently completed a survey for rare plants in the northern segment of the FE Everett Turnpike widening project. A summary of the survey is attached. No rare plants were found. Let me know if you have any questions or need any additional information.

Happy Friday!
Christine

Christine Perron, CWS
Project Manager * Senior Environmental Analyst McFarland Johnson
53 Regional Drive * Concord, NH 03301
OFFICE: 603-225-2978 ext. 1280
https://urldefense.com/v3/__http://www.mjinc.com__;!eeWmBe9sc1cuNw!HjoVUWjD1ILixRaRbvDwdEJdBShzVHyVo96ggpAyWP19RLuB720GHJMND4AbjnDNNRA$
<https://urldefense.com/v3/__http://www.mjinc.com/__;!eeWmBe9sc1cuNw!BQ8tKFRfaa6KuQWGKnTN8q6gKtyeIYQsbSGBeLvKAkWs6boB-Xow2d7c_ocUd0mliaY$>

NH Fish & Game Correspondence

Stephen Hoffmann

From: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Sent: Thursday, November 5, 2020 10:40 AM
To: Stephen Hoffmann
Cc: Doperalski, Melissa; cmartin@nhaudubon.org
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening NHB20-2699

Hi Steve,

Sandra Houghton is our eagle, peregrine, bat and loon biologist. Her comments below for peregrine and eagles should be incorporated into your work plans.

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH 03301
603-271-6544

From: Houghton, Sandra <Sandra.D.Houghton@wildlife.nh.gov>
Sent: Thursday, November 5, 2020 10:30 AM
To: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Subject: FW: Nashua-Merrimack-Bedford, #13761

Here is my previous review. They can use the nest locations on the NHB review.

From: Houghton, Sandra
Sent: Wednesday, October 14, 2020 10:18 AM
To: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Cc: Doperalski, Melissa <Melissa.Doperalski@wildlife.nh.gov>; Henderson, Carol <Carol.Henderson@wildlife.nh.gov>
Subject: RE: Nashua-Merrimack-Bedford, #13761

The peregrines on the I-293/NH Route 101 bridge have been using the nest tray below the deck of the bridge so my initial thought would be that the project will not cause visual disturbance (they were successful this year with work occurring on the deck of the bridge); it might be worth checking with Chris Martin.

There is an eagle nest near the project. It appears that most of the National Bald Eagle Management Guidelines could be followed; it would be helpful to have the applicant confirm especially for *Blasting and Other Loud, Intermittent Noises* page 12 on this form: https://www.fws.gov/northeast/ecologicalservices/pdf/eagle/NE_Bald-Eagle_Project-Screening-Form_rev20200416.pdf.

Thank you,
Sandi

Sandra Houghton

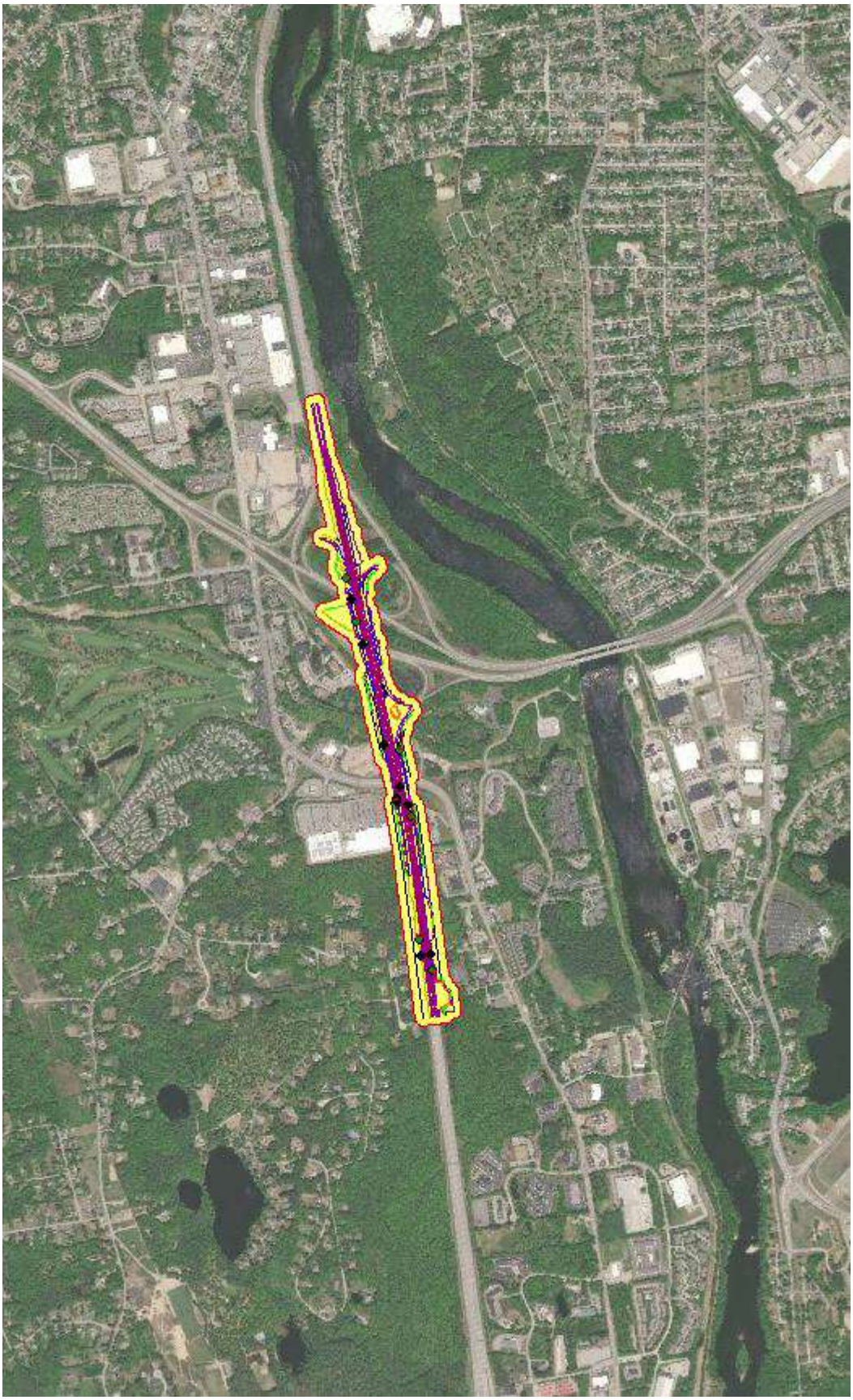
Wildlife Diversity Biologist
Nongame and Endangered Wildlife Program
NH Fish and Game Department

From: Stephen Hoffmann <shoffmann@mjinc.com>
Sent: Thursday, November 5, 2020 9:48 AM
To: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening

Hi Kim,

NHB20-2699, see attached. Please note that the original study area that was submitted to NHB for the DataCheck review was larger than the actual project area. The snip below shows the actual limits of the proposed project. As you can see, the project does not extend as far north as the study area in the NHB review, and it also does not include the entire NH Route 101/I-293 interchange area. Let me know if it would be helpful to send a shapefile of the project area.

Thanks,
Steve



From: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Sent: Thursday, November 5, 2020 9:25 AM

To: Stephen Hoffmann <shoffmann@mjinc.com>
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening

Steve,

Do you have the NHB file number? I can't query for it if it involves multiple towns. Then I can pass this along to the eagle biologists so they can evaluate whether it triggers The Bald and Golden Eagle Protection Act.

Kim

From: Stephen Hoffmann <shoffmann@mjinc.com>
Sent: Wednesday, November 4, 2020 3:54 PM
To: Tuttle, Kim <Kim.A.Tuttle@wildlife.nh.gov>
Cc: Christine J. Perron <CPerron@mjinc.com>; Doperalski, Melissa <Melissa.J.Doperalski@wildlife.nh.gov>
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening

Hi Kim,

The proposed highway widening project involves approximately 9,651 SF of permanent impacts and roughly 5,162 SF of temporary impacts to palustrine wetlands. The wetlands that will be impacted include palustrine forested wetlands and palustrine emergent wetlands. The emergent wetlands include a small ditch that is fairly low quality as well as the edge of a large cattail marsh. The table below provides a summary of the permanent impacts and the snip below the table includes photographs of the wetlands to be impacted in the approximate impact locations. Impacts have been minimized and avoided to the maximum extent practicable. Impacts were reduced from 20,861 SF of permanent wetland and 168 LF of stream channel impacts during preliminary design to 9,651 SF of permanent wetland impacts and 0 LF of stream channel impacts. Impacts to streams have been completely avoided and impacts to wetlands have been minimized by steepening slope lines and incorporating retaining walls into the design at certain locations. A vernal pool survey was completed in April 2017. There are no vernal pools located in the vicinity of the proposed project. There are 3 stream crossings located within the project area, but as noted above stream impacts have been completely avoided. No stream crossing replacements are proposed. Work will be required within 50' of some of the streams, but appropriate sediment and erosion controls will be implemented throughout construction. No smooth bore plastic crossings are proposed and we can be sure to include a condition that wildlife friendly erosion control matting will be used. I'm not sure if a specific product has been selected for use at this time. Thank you for sending the snake and turtle flyers, we can include those with the contract documents.

Can you please provide the exact location of any eagles nests in the vicinity? The NHB mapping included with the DataCheck Results is not very easy to read and determine exact locations. There are bald eagle nests and bald eagle roosts called out on the NHB figure. Based on my estimates the two bald eagle nests are located > 1,000 feet from the limits of work. Also, the project is located > 2,200 feet west of the NH Route 101/I-293 bridge over the Merrimack River where the peregrine falcon nest is located.

Please let me know if you need any additional information or have any follow up questions.

Thanks,
Steve

Impact Location	Wetland ID	Classification
A	W-33	PFO1E
B	W-33	PFO1E
C	W-43	PEM1Ed
D	W-46	PFO1E
E	W-48	PFO1E
F	W-49	PEM1E
		TOTAL

From: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Sent: Tuesday, November 3, 2020 9:26 AM
To: Stephen Hoffmann <shoffmann@mjinc.com>
Cc: Christine J. Perron <CPerron@mjinc.com>; Doperalski, Melissa <Melissa.Doperalski@wildlife.nh.gov>
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening

Hi Steve,

To get us started on the wetland permitting, please send us a narrative of wetland impacts inc. sq. ft. and type, stream crossings and vernal pool surveys and the efforts taken to avoid and minimize impacts to listed species when they become available. We will be looking for no cut vernal pool (50 ft.) and stream buffers (50 ft.) and steps taken to keep

these features free of contamination from polluted road run-off. All precautions shall be taken to avoid directly impacting vernal pools. We do not recommend smooth bore plastic culverts for wetland and stream crossings as they are an impediment to upstream movement to turtles and other reptiles, amphibians, and slow swimming fish species as well as mammals. Please consider box, ellipticals, RCPs and CMPs. We will only consider smooth bore plastic at wetland crossings where they are oversized and there is usually low velocity and are always backwatered. When you know how close to eagle's nest(s) you'll be to the nearest disturbance we'll have Sandi Houghton, our eagle, peregrine and bat biologist, take a look. Send over Google Earth maps showing these areas when available.

In order to avoid impacts to protected turtles and snakes, avoid the use of welded plastic or 'biodegradable plastic' netting or thread (e.g. polypropylene) in erosion control matting. There are numerous documented cases of wildlife being trapped and killed in erosion control matting with synthetic netting and thread. The use of erosion control berm, white Filtrexx Degradable Woven Silt Sock, or several 'wildlife friendly' options such as woven organic material (e.g. coco or jute matting such as North American Green SC150BN or equivalent) are readily available. Please let us know what specific products you intend on using.

The following notes should be prominently added to the plans along with a photo of Blanding's and spotted turtle and northern black racer that you may copy from the attached flyers:

Construction workers should be aware of the potential to encounter protected turtles from April through November at this site:
IF SPOTTED OR BLANDING'S TURTLES ARE FOUND LAYING EGGS IN A WORK AREA, PLEASE CONTACT MELISSA DOPERALSKI (603-479-1129 cell) or JOSH MEGYESY (cell 978-578-0802) FOR FURTHER INSTRUCTIONS.

ALL OBSERVATION OF EASTERN HOGNOSE SNAKE MUST BE IMMEDIATELY reported to the NHFG Department (Melissa Doperalski 603-479-1129 cell or Brendan Clifford 603-944-0885 cell). Please attempt to photograph this species to send to us for verification.

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH 03301
603-271-6544

From: Doperalski, Melissa <Melissa.Doperalski@wildlife.nh.gov>
Sent: Monday, November 2, 2020 3:04 PM
To: Stephen Hoffmann <shoffmann@mjinc.com>
Cc: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>; Christine J. Perron <CPerron@mjinc.com>
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening

Yep – all you say is true – I just wasn't sure if you were aware of that (I lose track) and wanted to double check or inform you of those discussions if warranted. Sounds like we are all good to proceed on providing comments for the wetlands needs.

Thank you Steve,
Melissa

From: Stephen Hoffmann <shoffmann@mjinc.com>
Sent: Monday, November 2, 2020 2:58 PM
To: Doperalski, Melissa <Melissa.Doperalski@wildlife.nh.gov>
Cc: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>; Christine J. Perron <CPerron@mjinc.com>
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening

Hi Melissa,

The project does exceed the threshold for AOT. As you are probably aware, an AOT permit is not required for DOT projects but projects still need to comply with AOT requirements. It's my understanding that DOT staff are currently working on developing a process that meets the new wildlife habitat assessment requirement. Once that process is determined, we will review this project with DOT to ensure compliance with the new requirement. The project is scheduled to advertise in Spring 2021, so we have some time for that coordination to be carried out.

We are currently preparing the wetland permit application and need your input on the species listed in the NHB memo to include in the application.

Thanks,
Steve

From: Doperalski, Melissa <Melissa.Doperalski@wildlife.nh.gov>
Sent: Monday, November 2, 2020 1:22 PM
To: Stephen Hoffmann <shoffmann@mjinc.com>
Cc: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Subject: RE: NHDOT 13761D F.E. Everett Turnpike Widening

Hi Steve,
Does the proposed work/disturbance threshold trigger adherence to AoT rules?

Thank you,
Melissa

From: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Sent: Monday, November 2, 2020 9:17 AM
To: Doperalski, Melissa <Melissa.Doperalski@wildlife.nh.gov>
Subject: FW: NHDOT 13761D F.E. Everett Turnpike Widening

From: Stephen Hoffmann <shoffmann@mjinc.com>
Sent: Friday, October 30, 2020 10:32 AM
To: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Subject: NHDOT 13761D F.E. Everett Turnpike Widening

Good Morning Kim,

I am reaching out regarding the subject NHDOT project to address potential wildlife concerns. I've attached the latest NHB report for your review. The project will not be impacting any streams or surface waters including the Merrimack River located east of the project area. Therefore, impacts to brook floater and American eel are not anticipated. At last week's NHDOT Natural Resource Agency Meeting Carol Henderson requested that Chris Martin be contacted during construction regarding the nesting peregrine falcons under the NH Route 101/I-293 bridge. Carol also noted that there was a bald eagle nest in the vicinity of the project and that the Bald Eagle Management Plan should be referenced and followed during construction.

The two species in the NHB report that have not been specifically addressed are the eastern hognose snake and spotted turtle. Please let me know if NHFG has any additional concerns regarding these species or any other wildlife species in the project area. Also, let me know if you have any questions or need any additional information regarding the proposed project and associated impacts.

Thanks,
Steve

Stephen Hoffmann • Environmental Analyst
McFarland-Johnson, Inc.
426 Industrial Ave, Suite 164 • Williston, VT 05495
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Rare Species Summary

RARE SPECIES COORDINATION SUMMARY

The 13761D project is part of the larger 13761 project that includes widening three segments of the existing 2-lane portions of the F.E. Everett Turnpike in Nashua, Merrimack, and Bedford, New Hampshire. The 13761D contract includes the northern segment located entirely in the Town of Bedford. Rare species coordination with the New Hampshire Natural Heritage Bureau and New Hampshire Fish and Game is summarized below. Avoidance and minimization measures that will be incorporated into the project are shown in bold text.

New Hampshire Natural Heritage Bureau

- Rare plant survey was conducted in July 2019 for bird-foot violet (*Viola pedata*), clasping milkweed (*Asclepias amplexicaulis*), and river birch (*Betula nigra*). No rare plant species were identified in the project area during the survey and NHB confirmed no further coordination on these species is necessary.
- River birch was observed during the July 2020 delineation growing along the Merrimack River, however it was found outside the proposed project area.
- Amy Lamb from NHB confirmed during the NHDOT Natural Resource Agency Coordination Meeting that no additional surveys are required for sessile-fruited arrowhead and Wright's spikesedge as they are associated with the Merrimack River and there are no impacts anticipated in the vicinity of the river.

New Hampshire Fish and Game

- Bald Eagle: National Bald Eagle Management Guidelines should be followed. The guidelines recommend a buffer of at least 330 feet year-round between all project activities and an active nest. During the breeding season (February 1-August 15), no disruptive project activities should occur within 660 feet of a nest and blasting and other activities that produce extremely loud noises should not be located within ½ mile of active nests. The known nest sites along the Merrimack River are located more than 1,000 feet from any proposed work and at least 0.65 miles from proposed blasting. Therefore, the proposed project meets all recommendations of the Bald Eagle Management Guidelines. The following language will be included in contract documents:
    - **There shall be no blasting to the north of the South River Road bridge without further coordination with NHFG to assess potential impacts to nesting bald eagles.**

- Peregrine Falcon: Nesting peregrine falcons are located under the NH Route 101/I-293 bridge over the Merrimack River. The project is located more than 1,000 feet west of the identified nest and will have no visual impact, therefore, there is no anticipated effect on nesting Peregrine falcons. However, the following language will be included in contract documents:

- **If construction or staging activities will be required within 500' of the NH Route 101/I-293 bridge over the Merrimack River, NHFG shall be contacted for guidance on avoiding impacts to nesting Peregrine falcons.**

- Eastern Hognose Snake, Spotted Turtle, Blanding's Turtle: The following measures will be implemented:

  - **The contractor will be required to use erosion control berm, white Filtrexx Degradable Woven Silt Sock, or other "wildlife friendly" options such as woven organic material (e.g. coco or jute matting such as North American Green SC150BN or equivalent) instead of welded plastic or "biodegradable plastic" netting or thread for erosion control matting. Specific products used will be detailed in the contractor's SWPPP.**

  - **Contract documents will detail that all observations of Eastern hognose snake must be immediately reported to NHFG: Melissa Doperalski (603-479-1129) or Brendan Clifford (603-944-0885).**

  - **Construction workers will be made aware of the potential to encounter protected turtles from April through November at the site. If spotted or Blanding's turtles are found laying eggs in a work area, NHFG will be contacted for further instructions (Melissa Doperalski (603-479-1129) of Josh Megyesy (cell 978-578-0802)).**

  - **NHFG flyers/photos of snakes and turtles will be included in the contract.**

Northern Long-Eared Bat

- According to the USFWS Official Species List, the project area is located within the documented range of the Federally threatened (state endangered) northern long-eared bat. The NHNHB and NHFG did not report any known winter hibernacula or maternity roost trees in the vicinity of the project.
- Tree clearing will occur in potential summer roosting habitat for the northern long-eared bat
- An acoustic survey was completed in 2018 within the project area for three (3) state-listed species: eastern small footed (*Myotis leibii*), little brown (*Myotis lucifugus*), and tri-colored bats (*Perimyotis subflavus*) and the federally-listed northern long-eared bat.
  - No species of concern were identified as potentially occurring within the northem segment of the project; there was probable presence of northern long-eared bat, little brown bat, and the tri-colored bat in the southern and middle segments.
  - This survey was completed to provide background and preliminary information on bat presence in the project area. It was conducted in consultation with USFWS but not in strict accordance with USFWS Summer Survey Guidelines
- The project was reviewed under the 4(d) Rule for northern long-eared bat. There are currently pending lawsuits against the USFWS challenging the listing of northern long-eared bat as

threatened instead of endangered and challenging the 4(d) Rule. In January 2020, the US District Court for the District of Columbia overturned the USFWS decision to list the northern long-eared bat as threatened rather than endangered. The USFWS is currently reevaluating the listing status based on the best available data. During this review process, the threatened status remains in effect, as does the 4(d) Rule.

- **Should the 4(d) Rule be rescinded, or the listing status changed to endangered prior to completion of construction, consultation with USFWS will be re-opened and the need for additional surveys will be determined.**

USFWS Official Species List

United States Department of the Interior

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

In Reply Refer To: November 30, 2020
Consultation Code: 05E1NE00-2020-SLI-3909
Event Code: 05E1NE00-2021-E-01706
Project Name: NHDOT 13761D F.E. Everett Turnpike Widening Northern Segment

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2020-SLI-3909

Event Code: 05E1NE00-2021-E-01706

Project Name: NHDOT 13761D F.E. Everett Turnpike Widening Northern Segment

Project Type: TRANSPORTATION

Project Description: The NHDOT 13761D project involves roadway widening and associated roadway improvements along a section of the F.E. Everett Turnpike in Bedford, NH. The proposed project begins approximately 1.0 mile north of the Bedford Toll Plaza and continues north for approximately 2.5 miles to the Bedford-Manchester Town Line. The project area also includes the majority of the NH Route 101 / I-293 (F.E. Everett Turnpike) Interchange area.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.94798628706595N71.4707012333725W

Counties: Hillsborough, NH

Endangered Species Act Species

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

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

Mammals

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

Critical habitats

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

USFWS 4(d) Rule Consistency Verification Letter

United States Department of the Interior

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

In Reply Refer To: January 27, 2021
Consultation code: 05E1NE00-2020-TA-3909
Event Code: 05E1NE00-2021-E-03616
Project Name: NHDOT 13761D F.E. Everett Turnpike Widening Northern Segment
Subject: Verification letter for the 'NHDOT 13761D F.E. Everett Turnpike Widening Northern Segment' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Leanne Ulrich:

The U.S. Fish and Wildlife Service (Service) received on January 27, 2021 your effects determination for the 'NHDOT 13761D F.E. Everett Turnpike Widening Northern Segment' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

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

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

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this

Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

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

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

1. Name

NHDOT 13761D F.E. Everett Turnpike Widening Northern Segment

2. Description

The following description was provided for the project 'NHDOT 13761D F.E. Everett Turnpike Widening Northern Segment':

> The NHDOT 13761D project involves roadway widening and associated roadway improvements along a section of the F.E. Everett Turnpike in Bedford, NH. The proposed project begins approximately 1.0 mile north of the Bedford Toll Plaza and continues north for approximately 2.5 miles to the Bedford-Manchester Town Line. The project area also includes the majority of the NH Route 101 / I-293 (F.E. Everett Turnpike) Interchange area.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.94798628706595,-71.4707012333725,14z

Determination Key Result

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

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

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

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

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

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

Determination Key Result

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

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

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

   Yes

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

   No

7. Will the action involve Tree Removal?

   Yes

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

   No

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

   No

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

    No

Project Questionnaire

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

1. Estimated total acres of forest conversion:

4.5

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

4.5

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

0

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

4. Estimated total acres of timber harvest

0

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

0

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

0

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

7. Estimated total acres of prescribed fire

0

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

0

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

0

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

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

0

Section 106 Effect Memo

New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

NASHUA-MERRIMACK-BEDFORD
13761
RPR 8452

No Adverse Effect Memo

Pursuant to meetings and discussions on March 9, 2017, April 12, 2018, and November 7, 2018, and for the purpose of compliance with regulations of the National Historic Preservation Act, the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the US Army Corps of Engineers' *Appendix C and NH RSA 227C:9 regarding the Preservation of State Historic Resources*; the NH Division of Historical Resources, NH Department of Transportation and the US Army Corps of Engineers (ACOE) have coordinated the identification and evaluation of cultural resources with plans to widen three segments of the F.E. Everett Turnpike (FEET) in the towns of Nashua, Merrimack and Bedford, New Hampshire.

Project Description

This project involves widening three segments of the FEET, totaling approximately 8 miles in length, from two lanes to three in each direction. The Area of Potential Effect extends approximately 300 feet from the centerline of the turnpike. The three segments include approximately 1.5 miles of the southern segment, beginning approximately 2,000 feet north of Exit 8 in Nashua, ending approximately 1,000 feet south of the Exit 10 overpass bridge in Merrimack. The middle segment runs for approximately 5.5 miles in Merrimack, starting approximately 3,500 south the Exit 11 overpass, includes the interchange at Exit 12 and ends approximately one mile south of the Bedford Toll Plaza. The northern segment begins approximately 0.6 miles south of the US Route 3 overpass bridge, running northerly for approximately 1.3 miles, ending at the northern limit of the I-293/NH Route 101 interchange in Bedford.

Although the Federal Highway Administration (FHWA) took interest in the undertaking due to its relation to the I-293 interchange, FHWA has since determined that they will not participate as a federal agency for this undertaking and as such the ACOE is the lead for their permitted areas.

Analysis

The FEET was reviewed in 2010 and was determined not eligible for the National Register of Historic Places. The Pennichuck Water Works (PWW) in Nashua was determined eligible for the National Register in 1993 and confirmed in 2003. Portions of the PWW are located within the Southern Segment, as it spans both sides of the FEET. There are three stormwater treatment areas proposed adjacent to and within the PWW property, in what is currently cleared ROW or undeveloped land.

An RPR addendum was submitted in March 2018 to NHDHR, and identified all of the structures located with the APE built prior to 1968. Comparing those properties to the proposed impacts, it has been determined that

all tree clearing and grading will occur within the turnpike right-of-way (ROW). All impacts are outlined in Table A1 of the RPR Addendum.

There are seven proposed noise barriers, ranging in height from 15-17 feet, proposed along the project. Of the properties that contain structures built prior to 1968, and are directly adjacent to the FEET, there are three individual properties (3 Gull Lane, 6 Camp Sargent Road, and 9 Smith Road) and one historic district (Bigwood Historic District) that would have noise barriers built adjacent to the properties. Tree clearing will be necessary for the installation of the noise barriers; however vegetation buffers will remain at these four noise barrier locations.

For the properties older than 50 years that abut the FEET where no noise barriers are proposed, tree cover will remain along Hoyt Street, Hillcrest Drive, Chamberlain Road, Wire Road, DW Highway, Harris Avenue, South River Road, Brookfield Drive, and Back River Road. The noise analysis was completed and the impacts were reviewed with SHPO in relation to the Area of Potential Effect at the November 7, 2018 meeting. The attached memo details that review.

There are a limited number of properties that abut the FEET that have limited vegetation buffers currently. There will be limited visual change at these locations, and noise analysis has shown that any noise decibel increases will likely not be noticeable. Properties include 15 Harris Avenue that currently abuts the northbound Exit 12 off ramp, 11 Sunset Avenue, 8 and 7 Priscilla Lane and 232 and 258 South River Road.

Other impacts that are adjacent to or need easements for properties along the FEET include tree clearing, stormwater treatment areas, and slope and grading work. All of the tree clearing, slope work and grading will take place within the ROW. There is one proposed stormwater treatment area that is adjacent to/and possibly within the parcel at 20 Wire Road. Tree cover will remain between the house and the proposed stormwater treatment location.

A Phase IA/IB Archaeological Investigation was completed along the project corridor and Phase II Determinations of Eligibility were completed at various location. It was determined that the Naticook Brook I Site is eligible for the National Register of Historic Places and is located within the APE. Should the site need to be impacted, NH Division of Historical Resources will be consulted and all necessary phases of archaeology will be completed.

Public Consultation

Town official meetings were held in each of the municipalities in 2016. Public meetings were held March 29, 2018 in Bedford, April 3, 2018 in Nashua, and May 1, 2018 in Merrimack. Initial contact letters were sent to Land and Community Heritage Investment Program (LCHIP), Land and Water Conservation Fund (LWCF), Conservation Land Stewardship (CLS) programs. Continued consultation with the Pennichuck Water Works will continue throughout the planning process.

Determination of Effect

Applying the criteria of effect at 36 CFR 800.5, we mutually agreed that the proposed actions will not have an adverse effect on historic properties. The limited impacts to the Pennichuck Water Works Historic District will not impact any of the contributing features of the district. The stormwater treatment areas will further advance the role that the Pennichuck Water Works plays in the watershed treatment area. The noise barrier that will be added adjacent to the Bigwood Historic District will not impact the character defining features of the district,

and a tree line will remain between the district and the noise barrier. The other remaining properties that are adjacent to the APE will retain their tree lines, and all slopework to be done will be within the ROW. No additional above ground survey is required and all necessary phases of archaeology will be completed.

The ACOE has reviewed the proposed plans in relation to their permit area and determined the project would not adversely affect historic resources.

In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

Jill Edelmann 12/10/2018
Jill Edelmann Date
Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

Nadine Miller, DSHPO for 12/13/18
Elizabeth H. Muzzey Date
State Historic Preservation Officer
NH Division of Historical Resources

c.c. Mike Hicks, ACOE
Jon Evans, NHDOT
Wendy Johnson, NHDOT
Chris St. Louis, NHDHR

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NH GP Appendix B – Corps Secondary Impacts Checklist and Supplemental Narrative

US Army Corps of Engineers®
New England District

Appendix B

Regional General Permits (GPs)
Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the New Hampshire DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to www.nae.usace.army.mil/regulatory, "Forms/Publications" and then "Application and Plan Guideline Checklist." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- Corps application form (ENG Form 4345) as appropriate.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible black and white (no color) plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
- Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. Don't use local datum. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
- Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
- Show project limits with existing and proposed conditions.
- Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
- Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the ordinary high water in inland waters and below the high tide line in coastal waters.
- Delineation of all waterways and wetlands on the project site,:
- Use Federal delineation methods and include Corps wetland delineation data sheets. See GC 2 and www.nero.noaa.gov/hcd for eelgrass survey guidance.
- GP 3, Moorings, contains eelgrass survey requirements for the placement of moorings.
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.

US Army Corps of Engineers ®
New England District

New Hampshire General Permits (GPs)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	X	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres?	X	
2.6 What is the area of the previously filled wetlands?	Unknown	
2.7 What is the area of the proposed fill in wetlands?	10,785 SF	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	Unknown	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	X	

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.	X	
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?	N/A	
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?	N/A	
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review**)** with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.
`

1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water?

The proposed project is located immediately west of the Merrimack River. At the northern limits of the 13761D project the Merrimack River is located approximately 250'-300' from the Merrimack River at its closest point. The majority of the project area is located approximately 500' to over 2,000' from the Merrimack River. According to the NHDES 2018 303(d) List (most recent available), this segment of the Merrimack River (NHRIV700060803-14-02) is impaired for pH and Aluminum.

Patten Brook (NHRIV700060803-12) is a perennial tributary of the Merrimack River located immediately south of the I-293 / NH Route 101 interchange. The stream flows from west to east, under the F.E. Everett Turnpike and is listed as impaired for Aluminum on the NHDES 2018 303(d) List.

A total of six (6) new stormwater BMPs are proposed: two (2) wet extended detention basins and four (4) vegetated treatment swales that will treat roughly 12.5 acres of impervious area. The proposed project is not anticipated to cause or contribute to surface water impairments.

2.1 Are there streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?

As mentioned above in Section 1.1, Patten Brook is a perennial stream and tributary of the Merrimack River that flows east through the project via a 72" RCP. A reinforced earth slope and steepened stone fill slopes are proposed in the vicinity of the Patten Brook stream crossing in order to accommodate the widening while avoiding any impacts to the stream or adjacent wetlands/floodplain.

Continuing north there are two smaller intermittent streams located within the I-293 / NH Route 101 interchange. One stream (S-15/S-11) is located immediately north of NH Route 101 WB and flows east under the Turnpike via a 24" RCP. The second stream (S-12) is located approximately 400' north and originates in a palustrine forested wetland area before flowing east under the Turnpike via an 18" RCP. No permanent impacts are proposed within the channel of either of the two intermittent streams. A total of 29 SF and 10 LF of temporary impact are required within the channel of S-15 in the vicinity of the culvert inlet for temporary dewatering.

Bowman Brook is a perennial tributary of the Merrimack River located near the northern limits of the proposed project. Work in the vicinity of the Bowman Brook crossing consists of pavement milling and overlaying. Therefore, no impacts to Bowman Brook are anticipated from the proposed projects.

While there are streams located within 200 feet of the proposed project, permanent impacts to surface waters have been completely avoided. Impacts from the proposed project to surface waters are limited to minor temporary impacts within an unnamed intermittent stream (S-15).

2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport, & wildlife passage?

No new wetland crossings are proposed as part of the proposed project. There are also no new or replacement stream crossings proposed. Therefore, the proposed project is expected to maintain the existing hydrology, sediment transport, and wildlife passage.

2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)

The proposed project is not anticipated to remove or impact any riparian buffers. As mentioned above in Section 2.1 and 2.3, there are no surface water impacts proposed. Impacts to the adjacent riparian wetland areas have been avoided and minimized to the maximum extent practicable. Impacts to riparian wetlands are minimal are located along the edges of existing wetlands adjacent to the Turnpike. Therefore, it is assumed that the proposed project will not result in removal of any riparian buffers.

3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project?

The US Fish and Wildlife Service Information for Planning and Consultation (IPaC) Tool Official Species List indicated that the proposed project area is within the documented range of the northern Long-eared bat. The proposed project is anticipated to require < 4.5 acres of tree clearing. The proposed project was evaluated in IPaC using the Northern Long-Eared Bat Consultation and 4(d) Rule Consistency Determination Key. Based on the results of this evaluation the proposed project resulted in a may affect determination. A Verification Letter was issued on January 27, 2021 confirming that while the project may affect northern long-eared bats, the proposed project is consistent with the activities covered under the Programmatic Biological Opinion and not prohibited under the Section 4(d) Rule.

The NH Natural Heritage Bureau (NHB) reviewed the project area and identified documented records of the following species in the vicinity of the proposed project area:

Brook Floater
River Birch
Sessile-fruited arrowhead
Wright's spikesedge
American eel
Bald Eagle
Eastern hognose snake
Peregrine falcon
Spotted turtle

Based on coordination with NHB and NH Fish and Game (NHFG) it was determined that based on the nature of impacts the proposed project is not anticipated to result in impacts to brook floater. A rare plant survey was completed for river birch, birds foot violet, and clasping milkweed (the latter two species were identified by NHB in project segments south of the northern segment). No river birch was identified within the project area. River birch was identified growing along the banks of the Merrimack River near the northern limits of the project. However, this population of river birch is located several hundred feet from the proposed project area. NHB confirmed that sessile fruited arrowhead and Wright's spikesedge are associated with habitats found along the Merrimack River. Since the proposed project does not involve impacts in the Merrimack River, it is assumed that these two species will not be impacted.

Impacts to surface waters are limited to 29 SF / 10 LF of temporary impacts within the channel of a small, intermittent stream. Therefore, the proposed project is not anticipated to impact the American eel.

Coordination with NHFG occurred in order to avoid impacts to state listed wildlife species including bald eagle, peregrine falcon, eastern hognose snake, and spotted turtle. Based on NHFG guidance and recommendations the proposed project will use wildlife friendly temporary slope stabilization. Flyers with photographs and descriptions of the eastern hognose snake and spotted turtle will be included in the contract documents. Eagle and falcon nests are located in the vicinity of the project but are > 2,000 feet from the proposed project. Impacts to these species are not anticipated.

3.1 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.")

The northern portion of the proposed project (north of NH Route 101) is located within a NH Wildlife Action Plan (WAP) "Highest Ranked Habitat in NH" polygon. This habitat feature is associated with the Merrimack River, and overlaps much of the existing F.E. Everett Turnpike corridor and infrastructure. Impacts in this area are limited to areas adjacent to the existing Turnpike. The proposed project will not result in significant changes to the habitat quality of these areas or result in additional fragmentation.

5. Historic/Archaeological Resources

The Request for Project Review (RPR) was sent to NH DHR and Section 106 consultation was carried out for the project. It was determined that the proposed project would have no adverse effect on known or potential cultural, historic, or archaeological resources. The No Adverse Effect memo is included with this submittal.

Photographs

Photo 1: Wetland 33 (W-33) – PFO; Wetland Impact Locations A & B (August 2016)

Photo 2: Wetland 33 (W-33) – PFO; Wetland Impact Locations A & B (August 2016)

Photo 3: Wetland 36 (W-36) – PEM; Wetland Impact Location C (August 2016)

Photo 4: Wetland 36 (W-36) – PEM; Wetland Impact Location C (August 2016)

Photo 5: Wetland 37 (W-37) – PFO; Wetland Impact Location D (August 2016)

Photo 6: Wetland 37 (W-37) – PFO; Wetland Impact Location D (August 2016)

Photo 7: Wetland 41 (W-41) – PEM/PFO; Approximate Wetland Impact Location E (August 2016)

Photo 8: Wetland 41 (W-41) – PEM/PFO; General Wetland Area (August 2016)

Photo 9: Wetland 43 (W-43) – PEM; Wetland Impact Location F (August 2016)

Photo 10: Wetland 43 (W-43) – PEM; Wetland Impact Location F (August 2016)

Photo 11: Wetland 45 & Stream 15 (W-45 / S-15) – PEM/PFO & R4SB4C; Wetland Impact Location G, H, I (June 2020)

Photo 12: Wetland 45 & Stream 15 (W-45 / S-15) – PEM/PFO & R4SB4C; Wetland Impact Location G, H, I (June 2020)

Photo 13: Wetland 46 (W-46) – PFO; Wetland Impact Location J (June 2020)

Photo 14: Wetland 47 (W-47) – PEM; Wetland Impact Location K, L, M (June 2020)

Photo 15: Wetland 47 (W-47) – PEM; Wetland Impact Location N, O, P (June 2020)

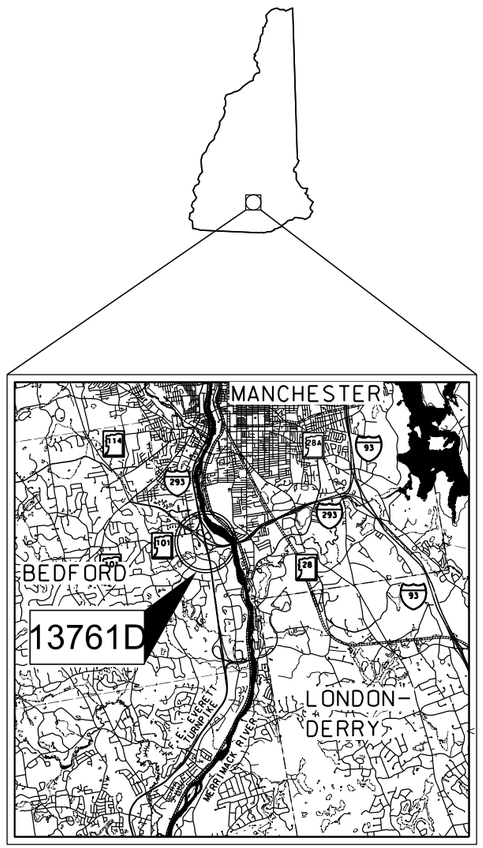
Photo 16: Wetland 49 (W-49) – PEM; Wetland Impact Location Q (June 2020)

Wetland Impact Plan Set

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS

NH PROJECT NO.13761D
F.E. EVERETT TURNPIKE WIDENING
NORTHERN SEGMENT



LOCATION MAP

1 ½ 0 1 2 mi.

GRAPHIC SCALE

STA. 1330+50.00 NB & SB
NORTHERN SEGMENT
BEGIN APPROACH
LIMIT OF WORK

STA. 1346+00.00, SB
NORTHERN SEGMENT
END APPROACH
BEGIN BOX WIDENING
CONSTRUCTION

STA. 8008+70.00
SB ON RAMP
LIMIT OF WORK

STA. 8010+50.00
BEGIN RAMP
CONSTRUCTION

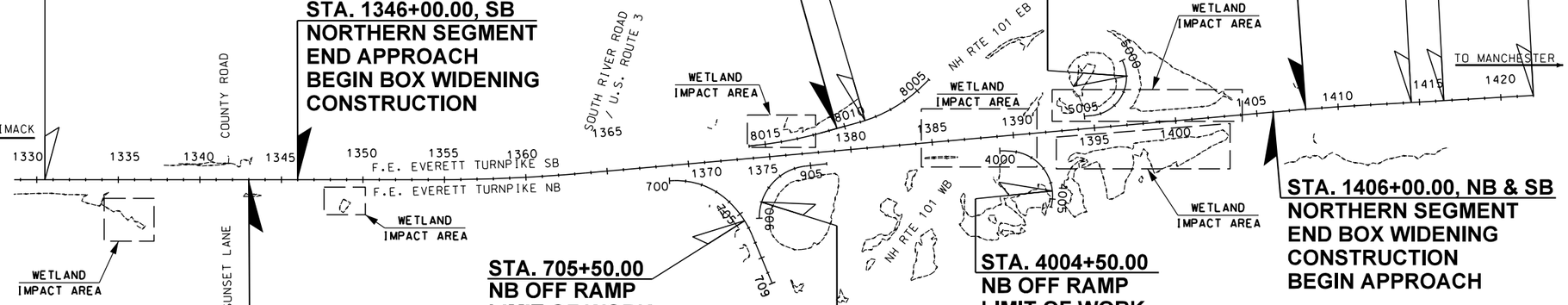
STA. 5001+00.00
SB ON RAMP
LIMIT OF WORK

STA. 1408+00.00 NB & SB
END OVERLAY
BEGIN INLAY

STA. 1414+50.00 NB & SB
NORTHERN SEGMENT
END APPROACH

STA. 1416+50.00 SB
LIMIT OF WORK

STA. 1422+00.00 NB
LIMIT OF WORK



STA. 705+50.00
NB OFF RAMP
LIMIT OF WORK

STA. 1343+00.00, NB
NORTHERN SEGMENT
END APPROACH
BEGIN BOX WIDENING
CONSTRUCTION

STA. 901+00.00
NB ON RAMP
LIMIT OF WORK

STA. 4004+50.00
NB OFF RAMP
LIMIT OF WORK

STA. 1406+00.00, NB & SB
NORTHERN SEGMENT
END BOX WIDENING
CONSTRUCTION
BEGIN APPROACH

TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH
SCALE: 1"=400'

WETLAND IMPACT
PLANS
DATE 4/29/2021

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

DRAWN BY DATE
CHECKED BY DATE

WETLAND PLANS PREPARED BY
McFarland Johnson
McFARLAND JOHNSON
CONCORD, N.H.
DELINEATION : July 2020

CHRISTINE J. PERRON NHDOT 13761D

CHA
11 King Court · Keene, NH 03431-4648
Main (603) 357-2445 · www.chacompanies.com

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:
DIRECTOR OF PROJECT DEVELOPMENT — DATE

APPROVED:
ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761_FSW		13761D	1	11

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — existing roadway — (pavement removed outside slope lines)

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed)
(label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM — OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream — pond — (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)

TREE OR STUMP (CROSS-SECTIONS) — (show station, circumference in feet & type)

HEDGE — (label type)

MONITORING WELL — mon W

WELL — W

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing — PROPOSED — bgr — cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) — (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl — lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 PUB2E

DELINEATED WETLAND — DW
ORDINARY HIGH WATER — OHW
TOP OF BANK — TOB
TOP OF BANK & ORDINARY HIGH WATER — TOBOHW
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND — PWET
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — CDL
TIDAL BUFFER ZONE — TBZ
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE — HOTL
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL — VP
SPECIAL AQUATIC SITE — SAS
REFERENCE LINE — REF
WATER FRONT BUFFER — WB50
NATURAL WOODLAND BUFFER — NWB150
PROTECTED SHORELAND — PS250
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FP500
100 YEAR FLOODPLAIN BOUNDARY — FP100
FLOODWAY — FW

ENGINEERING

CONSTRUCTION BASELINE — 30 — 31 — 32

PC, PT, POT (ON CONST BASELINE)

PI (IN CONSTRUCTION BASELINES)

INTERSECTION OR EQUATION OF TWO LINES

ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)

PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)

CLEARING LINE — SLOPE LINE

SLOPE LINE

SLOPE LINE (FILL)

SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

SHEET 1 OF 2

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	stdsymb1-2	13761D	2	11

DRAINAGE

MANHOLE
CATCH BASIN (cb) — (existing) / (PROPOSED)
DROP INLET (di)
DRAINAGE PIPE (existing) — (label size & type)
DRAINAGE PIPE (PROPOSED)
UNDERDRAIN (existing) W/ FLUSHING BASIN (fb) — (label size & type)
UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN
show direction of flow
HEADER (existing & PROPOSED) — (with stone outlet protection)
END SECTION (existing & PROPOSED) — METAL or PLASTIC / RCP
OPEN DITCH (PROPOSED)
EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE — (label type)
RR RIGHT-OF-WAY LINE
PROPERTY LINE
PROPERTY LINE (COMMON OWNER)
TOWN LINE — BOW / CONCORD
COUNTY LINE — COOS / GRAFTON
STATE LINE — MAINE / NEW HAMPSHIRE
NATIONAL FOREST
CONSERVATION LAND (LC)
BENCH MARK / SURVEY DISK
BOUND — bnd — (PROPOSED)
STATE LINE/ TOWN LINE MONUMENT — S/L — T/L
NHDOT PROJECT MARKER
IRON PIPE OR PIN (ip)
DRILL HOLE IN ROCK (dh)
TAX MAP AND LOT NUMBER — 156 / 14 — 1642/341 — 6.80 Ac.±
PROPERTY PARCEL NUMBER — 12
HISTORIC PROPERTY

UTILITIES

existing / PROPOSED

TELEPHONE POLE
POWER POLE
JOINT OCCUPANCY
MISCELLANEOUS/UNKNOWN POLE
GUY POLE OR PUSH BRACE
(plot point at face not center of symbol)
LIGHT POLE
LIGHT ON POWER POLE
LIGHT ON JOINT POLE

POLE STATUS:
REMOVE, LEAVE, PROPOSED, OR TEMPORARY
AS APPLICABLE e.g.:

R / L — P+04 25.0' — T+04 25.0'

RAILROAD — (label ownership)
RAILROAD SIGN
RAILROAD SIGNAL
UTILITY JUNCTION BOX (jb) — (JB)
OVERHEAD WIRE (OW) — (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) (W) — (PW)
SEWER (S) — (PS)
TELEPHONE (T) — (PT)
ELECTRIC (E) — (PE)
GAS (G) — (PG)
LIGHTING (L) — (PL)
INTELLIGENT TRANSPORTATION SYSTEM (ITS) — (PITS)
FIBER OPTIC (FO) — (PFO)
WATER SHUT OFF
GAS SHUT OFF
HYDRANT

MANHOLES

SEWER (MHS)
TELEPHONE (MHT)
ELECTRICAL (MHE)
GAS (MHG)
UNKNOWN

TRAFFIC SIGNALS / ITS

existing / PROPOSED

MAST ARM (existing) — 30' MA (NOTE ANGLE FROM ℄)
OPTICOM RECEIVER
OPTICOM STROBE
TRAFFIC SIGNAL
PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT
SIGNAL CONDUIT — (C) / (PC)
CONTROLLER CABINET — cc / CC
METER PEDESTAL — mp / MP
PULL BOX — pb / PB
LOOP DETECTOR (QUADRUPOLE) — (label size)
LOOP DETECTOR (RECTANGULAR) — (label size)
CAMERA POLE (CCTV)
FIBER OPTIC DELINEATOR — fod / FOD
FIBER OPTIC SPLICE VAULT — SVF
ITS EQUIPMENT CABINET — its / ITS
VARIABLE SPEED LIMIT SIGN
DYNAMIC MESSAGE SIGN
ROAD AND WEATHER INFO SYSTEM

CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	A
DRAINAGE NOTE	1
EROSION CONTROL NOTE	A
FENCING NOTE	A
GUARDRAIL NOTE	1
ITS NOTE	1
LIGHTING NOTE	A
TRAFFIC SIGNAL NOTE	1

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	stdsymb1-2	13761D	3	11

WETLAND IMPACT SUMMARY - NEW HAMPSHIRE

WETLAND NUMBER	WETLAND CLASS-IFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION			DESCRIPTIONS
			PERMANENT				TEMPORARY		PERMANENT			
			N.H.W.B. (NON-WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)				BANK LEFT	BANK RIGHT	CHANNEL	
			SF	LF	SF	LF	SF	LF	LF	LF	LF	
33	PF01E	A			415		492					STORMWATER TREATMENT BMP OUTLET PAD AND GRADING
33	PF01E	B			109		116					STORMWATER TREATMENT BMP GRADING
36	PEM1E	C					63					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
37	PF01E	D					63					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
41	PF01E	**E**			43		141					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
43	PEM1Sd	F			1677							CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
45	PEM1E	**G**					47					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
S-15	R4SB4C	H					29	10				TEMPORARY WATER CONTROL FOR DRAINAGE SYSTEM IMPROVEMENTS
45	PEM1E	I					28					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
46	PF01E	J			501		270					HIGHWAY WIDENING AND ASSOCIATED GRADING
47	PF01E	K					33					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
47	PEM1E	L			223		526					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
47	PF01E	M			82							CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
47	PEM1E	N			587							CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
47	PEM1E	O			18		129					CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
47	PEM1E	P			85							CONSTRUCTION ACCESS AND SEDIMENT/EROSION CONTROLS
49	PEM1E	Q			7045		2383					HIGHWAY WIDENING AND ASSOCIATED GRADING
		TOTAL			10,785		4,320	10				

NEW HAMPSHIRE IMPACTS
PERMANENT IMPACTS: 10,785 SF
TEMPORARY IMPACTS: 4,320 SF
TOTAL IMPACTS: 15,105 SF

WETLAND CLASSIFICATION CODES	
PF01E	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
PEM1E	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED/SATURATED
PEM1Ed	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED/SATURATED, DITCHED
R4SB4C	RIVERINE. INTERMITTENT, STREAMBED, SAND, SEASONALLY

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION	STATION

SDR PROCESSED DATE
NEW DESIGN DATE
SHEET CHECKED DATE
AS BUILT DETAILS

CHA
11 King Court
Keene, NH 03431-4648
603.357.2445 - www.chacompanies.com

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN
WETLAND IMPACT SUMMARY SHEET

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wetsum	13761D	4	11

B28
LANDS N/F
ROBERT J. LAMEY TRUSTEE

B31
LANDS N/F
DONALD J. JUTRAS, JR.
& DIANE JUTRAS

B38
LANDS N/F
DURIGA FAMILY TRUST OF 1999

STA. 1330+50.00 NB & SB
NORTHERN SEGMENT
BEGIN APPROACH
LIMIT OF WORK
MATCH EXISTING
PAVEMENT MARKINGS

B29
LANDS N/F
RALPH E. DUTTON JR. &
PAULA L. DUTTON

POT 1335+22.87 F.E.E.T., 73.0' RT. =
POT 50+00.00 1338 BMP ACCESS ROAD

B32
LANDS N/F
CLAIRE M. NORFOLK

B32
LANDS N/F
ARMAND & JUDITH SARETTE

COUNTY ROAD

TREATMENT SWALE

APPROXIMATE WETLAND
BOUNDARY

W. P2650E

EXIST. L.A.R.O.W. P2650E

F.E. EVERETT TURNPIKE SB

F.E. EVERETT TURNPIKE NB

MC1M

MC1B

MC1A

PROPOSED BMP 1338

EXIST. L.A.R.O.W. P2650E

EXIST. L.A.R

L.A.R.O.W.

MATCHLINE – SEE WETLAND IMPACT PLAN 2

B30
LANDS N/F
PAUL H. MACEWEN, SR. TRUSTEE

B19
LANDS N/F
NORTH WENDENWIECH LLC

UNNAMED BROOK

B30
LANDS N/F
PAUL H. MACEWEN, SR.
TRUSTEE

B34
LANDS N/F
K & M PROPERTIES LLC

SUNSET LANE

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER
WETLAND IMPACT LOCATION
WETLAND MITIGATION AREA
MITIGATION

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED DATE
NEW DESIGN DATE
SHEET CHECKED DATE
AS BUILT DETAILS

CHA
11 King Court
Keene, NH 03431-4648
603.357.2445 • www.chacompanies.com

McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 1

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wet	13761D	5	11

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

(#) WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

(#) WETLAND MITIGATION AREA

MITIGATION

GRID N

STA. 1346+00.00, SB
NORTHERN SEGMENT
END APPROACH
BEGIN BOX WIDENING
CONSTRUCTION

STA. 1343+00.00, NB
NORTHERN SEGMENT
END APPROACH
BEGIN BOX WIDENING
CONSTRUCTION

B39 LANDS N/F DURIGA FAMILY TRUST OF 1999

B38 LANDS N/F DURIGA FAMILY TRUST OF 1999

B43 LANDS N/F STATE OF NEW HAMPSHIRE

B35 LANDS N/F JOSEPH & SANDRA GAUCI

B40 LANDS N/F AN KYUNG & NAM Y

B41 LANDS N/F 264 SOUTH RIVER ROAD LLC

B42 LANDS N/F 262 SOUTH RIVER ROAD LLC

F.E. EVERETT TURNPIKE SB

F.E. EVERETT TURNPIKE NB

EXIST. L.A.R.O.W. P2650J

O.W. P2650J

PC 1354+45.80

MC1M

MATCHLINE - SEE WETLAND IMPACT PLAN 1

MATCHLINE - SEE WETLAND IMPACT PLAN 3

36 PEM1E

37 PFO1E

50 0 50 100

SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

	DATE
SDR PROCESSED	
NEW DESIGN	
SHEET CHECKED	
AS BUILT DETAILS	

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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wet	13761D	6	11

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED DATE

NEW DESIGN DATE

SHEET CHECKED DATE

AS BUILT DETAILS

B44
LANDS N/F
PDNED BEDFORD LLC

GRID N

SOUTH RIVER ROAD / U.S. ROUTE 3

PT 1363+66.49

BRIDGE NO. 189/122

MATCHLINE – SEE WETLAND IMPACT PLAN 2

MATCHLINE – SEE WETLAND IMPACT PLAN 4

F.E. EVERETT TURNPIKE SB

F.E. EVERETT TURNPIKE NB

EXIST. L.A.R.O.W. P2650J

B45
LANDS N/F
VISTA HEIGHTS PROPERTIES LLC

B46
LANDS N/F
ROBERT & ROGER RHEAULT

B48
LANDS N/F
ROBERT & ROGER RHEAULT

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND MITIGATION AREA

MITIGATION

50 0 50 100
SCALE IN FEET

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 3

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wet	13761D	7	11

B49
NDS N/F
SOUTH
R ROAD LLC

B50
LANDS N/F
11 SOUTH RIVER ROAD LLC

B51
LANDS N/F
FARLEY WHITE BEOP LLC

B52
LANDS N/F
FARLEY WHITE BEOP LLC

GRID

POT 1373+80.00 F.E.E.T., 76.0' LT. =
POT 8016+00.00 SB ON RAMP 101 EAST

NH Rte 101 EB to F.E.E.T SB

STA. 8010+50.00
BEGIN RAMP CONSTRUCTION

POT 1372+00.00 F.E.E.T., 58.0' RT. =
POT 70+00.00 1374 BMP ACCESS ROAD

PATTEN BROOK

EXIST. L.A.R.O.W. P2650J

EXIST. L.A.R.O.W. P3373A

PFOTE

MCGR

NH Rte 101 EB to F.E.E.T SB

F.E. EVERETT TURNPIKE SB

F.E. EVERETT TURNPIKE NB

MC1M

PROPOSED BMP 1374
MC2A

MC2B

MATCHLINE - SEE WETLAND IMPACT PLAN 3

MATCHLINE - SEE WETLAND IMPACT PLAN 5

POT 1368+75.00 F.E.E.T.,
93.0' RT. =
POT 700+00.00 NB OFF RAMP 101 EAST

B48
LANDS N/F
ROBERT & ROGER RHEAULT

STA. 705+50.00
NB OFF RAMP
LIMIT OF WORK

706 F.E.E.T. NB TO I-293 SB

NH RTE 101 EB TO F.E.E.T. NB

MCHR

STA. 901+00.00
NB ON RAMP
LIMIT OF WORK

POT 1377+45.00 F.E.E.T.,
76.0' RT. =
POT 905+00.00 NB ON RAMP
TO F.E.E.T. NB

50 0 50 100
SCALE IN FEET

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER
WETLAND IMPACT LOCATION
WETLAND MITIGATION AREA
MITIGATION

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED DATE
NEW DESIGN DATE
SHEET CHECKED DATE
AS BUILT DETAILS

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McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 4

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wet	13761D	8	11

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND IMPACT PLAN 5

MATCHLINE - SEE WETLAND IMPACT PLAN 4

MATCHLINE - SEE WETLAND IMPACT PLAN 6

F.E. EVERETT TURNPIKE SB

F.E. EVERETT TURNPIKE NB

I-293/RTE 101

NH RTE 101

TREATMENT SWALE 1385L

TREATMENT SWALE 1385R

BRIDGE NO. 186/132

BRIDGE NO. 186/131

POT 1389+10.00 F.E.E.T.. 89.0' RT. TO 4000+00.00 NB OFF RAMP TO 101 WB

MC1M

MC1R

SCALE IN FEET

50 0 50 100

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STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wet	13761D	9	11

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED DATE

NEW DESIGN DATE

SHEET CHECKED DATE

AS BUILT DETAILS

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

	DATE
SDR PROCESSED	
NEW DESIGN	
SHEET CHECKED	
AS BUILT DETAILS	

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

(#) WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

(#) WETLAND MITIGATION AREA

MITIGATION

GRID N

STA. 5001+00.00
SB ON RAMP
LIMIT OF WORK

POT 1394+45.00 F.E.E.T., 76.0' LT.

POT 5005+00.00 SB ON RAMP TO F.E.E.T.

STA. 4004+50.00
NB OFF RAMP
LIMIT OF WORK

NH RTE 101 WB TO F.E.E.T. SB

F.E. EVERETT TURNPIKE SB

F.E. EVERETT TURNPIKE NB

MC1M

MCJR

BRIDGE NO. 185/134

TREATMENT SWALE 1400R

48 PF01E

49 PEM1/F01E

46 PF01E

47 PUBH/F01/EM1E

47 PUBH/F01/EM1E

B53 LANDS N/F STATE OF NEW HAMPSHIRE

APPROX. EXIST. L.A.R.O.W. P3373A

EXIST. L.A.R.O.W. P3373A

MATCHLINE - SEE WETLAND IMPACT PLAN 5

MATCHLINE - SEE WETLAND IMPACT PLAN 7

50 0 50 100
SCALE IN FEET

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Keene, NH 03431-4648
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McFarland Johnson

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 6

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wet	13761D	10	11

LEGEND

TYPE OF WETLAND IMPACT	SHADING/ HATCHING
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

- # — WETLAND DESIGNATION NUMBER
- # — WETLAND IMPACT LOCATION
- # — WETLAND MITIGATION AREA
- MITIGATION

GRID N

STA. 1406+00.00, NB & SB
NORTHERN SEGMENT
END BOX WIDENING
CONSTRUCTION
BEGIN APPROACH

STA. 1408+00.00 NB & SB
END OVERLAY
BEGIN INLAY

STA. 1414+50.00 NB & SB
NORTHERN SEGMENT
END APPROACH

LIMIT OF WORK
MATCH EXISTING
PAVEMENT MARKINGS

STA. 1422+00.00 NB
LIMIT OF WORK
MATCH EXISTING
PAVEMENT MARKINGS

B54
LANDS N/F
ER BEDFORD LLC

B53
LANDS N/F
STATE OF NEW HAMPSHIRE

BOWMAN BROOK

APPROX. EXIST. L.A.R.O.W. P2650J ALONG MERRIMACK RIVER

MERRIMACK RIVER

I-293/F.E.E.T. SB

I-293/F.E.E.T. NB

MATCHLINE - SEE WETLAND IMPACT PLAN 6

PC 1406+64.32

PT 1411+25.44

SCALE IN FEET: 50 0 50 100

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

	DATE
SDR PROCESSED	
NEW DESIGN	
SHEET CHECKED	
AS BUILT DETAILS	

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN 7

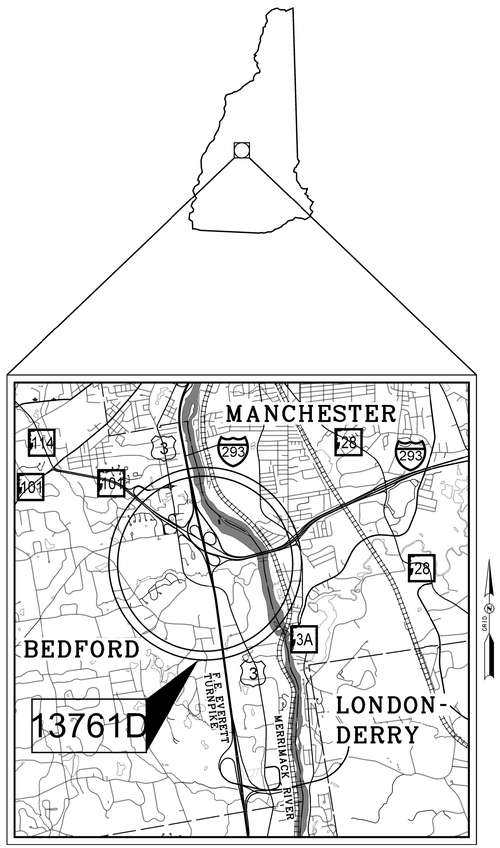
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761wet	13761D	11	11

Erosion Control Plan Set & Construction Sequence

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
EROSION CONTROL PLANS
F.E. EVERETT CORRIDOR WIDENING
NH PROJECT NO. 13761D (NORTHERN SEGMENT)

DESIGN DATA

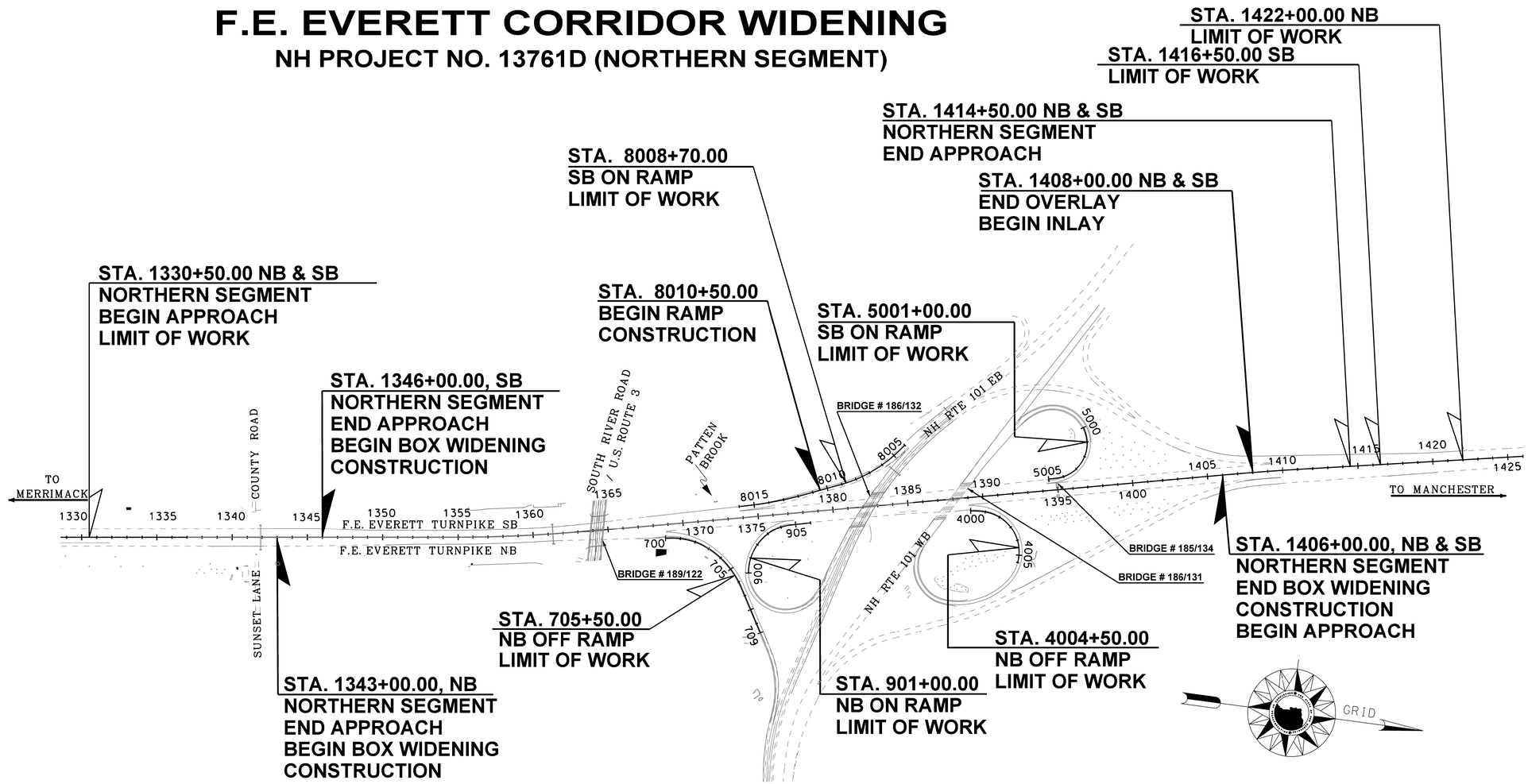
SB F.E.E.T.		NB F.E.E.T.	
AVERAGE DAILY TRAFFIC 20_24	26,841	AVERAGE DAILY TRAFFIC 20_24	26,133
AVERAGE DAILY TRAFFIC 20_44	34,411	AVERAGE DAILY TRAFFIC 20_44	33,504
PERCENT OF TRUCKS	2%	PERCENT OF TRUCKS	2%
DESIGN SPEED	70 MPH	DESIGN SPEED	70 MPH
ROADWAY CLASSIFICATION	PRINCIPAL ART.	ROADWAY CLASSIFICATION	PRINCIPAL ART.
LENGTH OF PROJECT	1.52 MILES	LENGTH OF PROJECT	1.52 MILES



LOCATION MAP

1 1/2 0 1 2 mi.

GRAPHIC SCALE



EROSION CONTROL PLANS
DATE 6/8/2021

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	TITLE PAGE
2-3	STANDARD SYMBOLS
4-10	EROSION CONTROL PLANS
11	EROSION CONTROL STRATEGIES
12	TRAFFIC CONTROL SEQUENCING AND CONSTRUCTION SEQUENCE NOTES

TOWN OF BEDFORD
COUNTY OF HILLSBOROUGH
SCALE: 1"=400'

DRAWN BY - P. PARE DATE - 06/2021
CHECKED BY - J. PARRELLI DATE - 06/2021

CHA
11 King Court • Keene, NH 03431-4648
Main: (603) 357-2445 • www.chacompanies.com

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

STATE OF NEW HAMPSHIRE
JOHN P. PARRELLI
No. 10524
PROFESSIONAL ENGINEER

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT — DATE

MUNICIPAL HIGHWAYS ENGINEER
BUREAU OF PLANNING AND COMMUNITY ASSISTANCE — DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
13761_FSC_ECP.dgn		13761D	1	12

DRAINAGE

MANHOLE
CATCH BASIN — cb
DROP INLET — di
(existing) (PROPOSED)

DRAINAGE PIPE (existing) (label size & type)
DRAINAGE PIPE (PROPOSED)
UNDERDRAIN (existing) W/ FLUSHING BASIN — fb (label size & type)
UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN
show direction of flow
HEADER (existing & PROPOSED) (with stone outlet protection)
END SECTION (existing & PROPOSED) METAL or PLASTIC / RCP
OPEN DITCH (PROPOSED)
EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE (label type)
RR RIGHT-OF-WAY LINE
PROPERTY LINE — PL
PROPERTY LINE (COMMON OWNER) — Z
TOWN LINE — BOW / CONCORD
COUNTY LINE — COOS / GRAFTON
STATE LINE — MAINE / NEW HAMPSHIRE
NATIONAL FOREST
CONSERVATION LAND — LC
BENCH MARK / SURVEY DISK
BOUND — bnd (PROPOSED)
STATE LINE/ TOWN LINE MONUMENT — S/L T/L
NHDOT PROJECT MARKER
IRON PIPE OR PIN — ip
DRILL HOLE IN ROCK — dh
TAX MAP AND LOT NUMBER — 156 / 14, 1642/341, 6.80 Ac.±
PROPERTY PARCEL NUMBER — 12
HISTORIC PROPERTY — H

UTILITIES

existing PROPOSED

TELEPHONE POLE
POWER POLE
JOINT OCCUPANCY
MISCELLANEOUS/UNKNOWN POLE
GUY POLE OR PUSH BRACE
(plot point at face not center of symbol)
LIGHT POLE
LIGHT ON POWER POLE
LIGHT ON JOINT POLE

POLE STATUS:
REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.:
R L — P+04 25.0' — T+04 25.0'

RAILROAD — (label ownership)
RAILROAD SIGN
RAILROAD SIGNAL
UTILITY JUNCTION BOX — jb JB
OVERHEAD WIRE — OW (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) — W PW
SEWER — S PS
TELEPHONE — T PT
ELECTRIC — E PE
GAS — G PG
LIGHTING — L PL
INTELLIGENT TRANSPORTATION SYSTEM — ITS
FIBER OPTIC — FO PFO
WATER SHUT OFF
GAS SHUT OFF
HYDRANT

MANHOLES

SEWER — MHS
TELEPHONE — MHT
ELECTRICAL — MHE
GAS — MHG
UNKNOWN

EROSION CONTROL PLANS
DATE 6/8/2021

TRAFFIC SIGNALS / ITS

existing PROPOSED

MAST ARM (existing) — 30' MA (NOTE ANGLE FROM ℄)
OPTICOM RECEIVER
OPTICOM STROBE
TRAFFIC SIGNAL
PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT
SIGNAL CONDUIT — C PC
CONTROLLER CABINET — cc CC
METER PEDESTAL — mp MP
PULL BOX — pb PB
LOOP DETECTOR (QUADRUPOLE) (label size)
LOOP DETECTOR (RECTANGULAR) (label size)
CAMERA POLE (CCTV)
FIBER OPTIC DELINEATOR — fod FOD
FIBER OPTIC SPLICE VAULT — SVF
ITS EQUIPMENT CABINET — its ITS
VARIABLE SPEED LIMIT SIGN (VSL)
DYNAMIC MESSAGE SIGN (DMS)
ROAD AND WEATHER INFO SYSTEM (RNIS)
MICROWAVE VEHICLE DETECTION SYSTEM (MVDS)

CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	A
DRAINAGE NOTE	1
EROSION CONTROL NOTE	A
FENCING NOTE	A
GUARDRAIL NOTE	1
ITS NOTE	1
LIGHTING NOTE	A
TRAFFIC SIGNAL NOTE	1

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	13761sym.dgn	13761D	2	12

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — existing roadway — (pavement removed outside slope lines)

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed)
(label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM — OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream — pond — (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)
(show station, circumference in feet & type)

TREE OR STUMP (CROSS-SECTIONS)

HEDGE — (label type)

MONITORING WELL — mon W

WELL — W

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing — PROPOSED — bgr — cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) — (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft — (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl — lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 PUB2E

DELINEATED WETLAND — DW
ORDINARY HIGH WATER — OHW
TOP OF BANK — TOB
TOP OF BANK & ORDINARY HIGH WATER — TOBOHW
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND — PWET
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — CDL
TIDAL BUFFER ZONE — TBZ
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE — HOTL
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL — VP
SPECIAL AQUATIC SITE — SAS
REFERENCE LINE — REF
WATER FRONT BUFFER — WB50
NATURAL WOODLAND BUFFER — NWB150
PROTECTED SHORELAND — PS250
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES DELINEATION — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FP500
100 YEAR FLOODPLAIN BOUNDARY — FP100
FLOODWAY — FW

ENGINEERING

CONSTRUCTION BASELINE — 30 — 31 — 32

PC, PT, POT (ON CONST BASELINE)

PI (IN CONSTRUCTION BASELINES)

INTERSECTION OR EQUATION OF TWO LINES

ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)

PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)

CLEARING LINE — SLOPE LINE

SLOPE LINE

SLOPE LINE (FILL)

SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

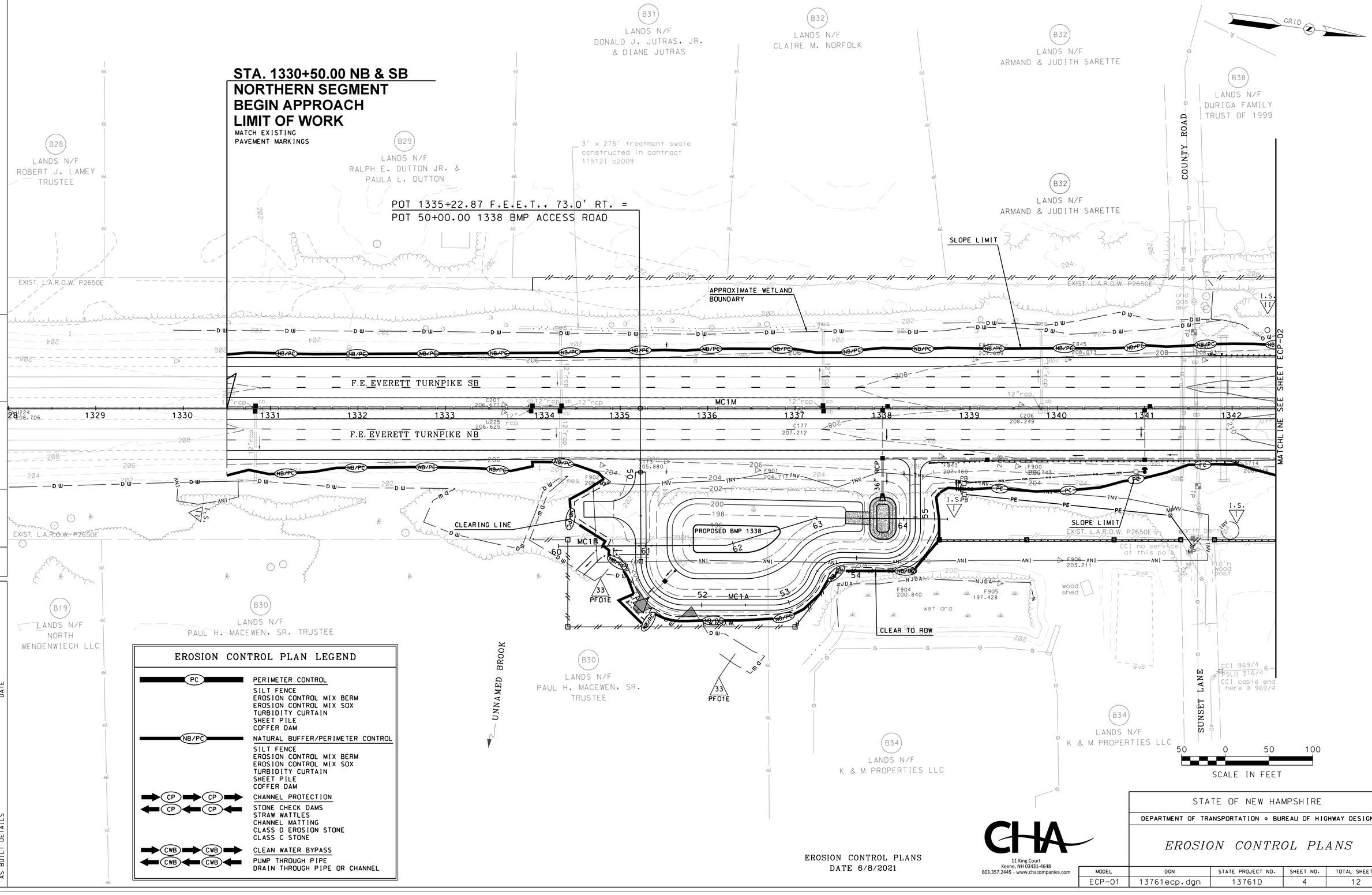
EROSION CONTROL PLANS
DATE 6/8/2021

SHEET 1 OF 2

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	13761sym.dgn	13761D	3	12



EROSION CONTROL PLAN LEGEND

- PC — PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- NB/PC — NATURAL BUFFER/PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- CP — CHANNEL PROTECTION
  - STONE CHECK DAMS
  - STRAW WATTLES
  - CHANNEL MATTING
  - CLASS D EROSION STONE
  - CLASS C STONE
- CWB — CLEAN WATER BYPASS
  - PUMP THROUGH PIPE
  - DRAIN THROUGH PIPE OR CHANNEL

EROSION CONTROL PLANS
DATE 6/8/2021

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Keene, NH 03431-4648
603.357.2445 • www.chacompanies.com

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ECP-01	13761ecp.dgn	13761D	4	12

NUMBER	DESCRIPTION	STATION	DATE
	REVISIONS AFTER PROPOSAL		

		DATE
SDR PROCESSED	NHDOT	1/12
NEW DESIGN	P.R.P.	6/21
SHEET CHECKED	J.P.	6/8/21
AS BUILT DETAILS		DATE

CHA PROJ. NO. 057314.000
PLOTTED DATED 6/8/2021
FILE NAME = V:\PROJECTS\ANY\65\057314.000\CADD_MSTN\PRJ\CUTSHEET\13761ECP.DGN

NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 1/12
NEW DESIGN	P.R.P.	DATE 6/21
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EROSION CONTROL PLAN LEGEND

- PC — PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- NB/PC — NATURAL BUFFER/PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- CP — CHANNEL PROTECTION
  - STONE CHECK DAMS
  - STRAW WATTLES
  - CHANNEL MATTING
  - CLASS D EROSION STONE
  - CLASS C STONE
- CWB — CLEAN WATER BYPASS
  - PUMP THROUGH PIPE
  - DRAIN THROUGH PIPE OR CHANNEL

GRID

STA. 1346+00.00, SB
NORTHERN SEGMENT
END APPROACH
BEGIN BOX WIDENING
CONSTRUCTION

STA. 1343+00.00, NB
NORTHERN SEGMENT
END APPROACH
BEGIN BOX WIDENING
CONSTRUCTION

B39 LANDS N/F DURIGA FAMILY TRUST OF 1999

B38 LANDS N/F DURIGA FAMILY TRUST OF 1999

B43 LANDS N/F STATE OF NEW HAMPSHIRE

B35 LANDS N/F JOSEPH & SANDRA GAUCI

B40 LANDS N/F AN KYUNG & NAM Y

B41 LANDS N/F 264 SOUTH RIVER ROAD LLC

B42 LANDS N/F 262 SOUTH RIVER ROAD LLC

ITEM 572.1
RECONSTRUCTING STONE WALL,
ONE STONE WIDE (30')
ACCESS FROM LT SIDE OF PARCEL B43

ITEM 572.1
RECONSTRUCTING STONE WALL,
ONE STONE WIDE (20')

CLEARING LINE
SLOPE LIMIT
PROPOSED ROCK LINE
REMOVE
CLEAR TO ROW
EXIST L.A.R.O.W. P2650J
F.E. EVERETT TURNPIKE SB
F.E. EVERETT TURNPIKE NB
36 PEM1E
37 PF01E
I.S.
MATCHLINE SEE SHEET ECP-01
MATCHLINE SEE SHEET ECP-03
MC1M

50 0 50 100
SCALE IN FEET

EROSION CONTROL PLANS
DATE 6/8/2021

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Keene, NH 03431-4648
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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ECP-02	13761ecp.dgn	13761D	5	12

EROSION CONTROL PLAN LEGEND

PC	PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
NB/PC	NATURAL BUFFER/PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
CP CP	CHANNEL PROTECTION
CP CP	STONE CHECK DAMS
	STRAW WATTLES
	CHANNEL MATTING
	CLASS D EROSION STONE
	CLASS C STONE
CWB CWB	CLEAN WATER BYPASS
CWB CWB	PUMP THROUGH PIPE
	DRAIN THROUGH PIPE OR CHANNEL

GRID N

B44
LANDS N/F
PDNED BEDFORD LLC

SOUTH RIVER ROAD / U.S. ROUTE 3

PROPOSED ROCK LINE
SLOPE LIMIT
CLEARING LINE
EXIST. L.A.R.O.W. P2650J
REMOVE
BRIDGE NO. 189/122
F.E. EVERETT TURNPIKE NB
F.E. EVERETT TURNPIKE SB
MC1M
MATCHLINE SEE SHEET ECP-02
MATCHLINE SEE SHEET ECP-04
PROPOSED OVERHEAD SIGN STRUCTURE
600 copper pairs 588 fiber pairs
2400 copper pairs 804 fiber pairs
2400 copper pairs 340 fiber pairs
CCI 996/2 PSCO 1/85-2

B45
LANDS N/F
VISTA HEIGHTS PROPERTIES LLC

B48
LANDS N/F
ROBERT & ROGER RHEAULT

B46
LANDS N/F
ROBERT & ROGER RHEAULT

50 0 50 100
SCALE IN FEET

EROSION CONTROL PLANS
DATE 6/8/2021

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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ECP-03	13761ecp.dgn	13761D	6	12

SDR PROCESSED	NHDOT	DATE 1/12
NEW DESIGN	P.R.P.	DATE 6/21
SHEET CHECKED	J.P.	DATE 6/8/21
AS BUILT DETAILS		DATE

NUMBER	DATE	STATION	DESCRIPTION

REVISIONS AFTER PROPOSAL

CHA PROJ. NO. 057314.000

PLOTTED DATED 6/8/2021

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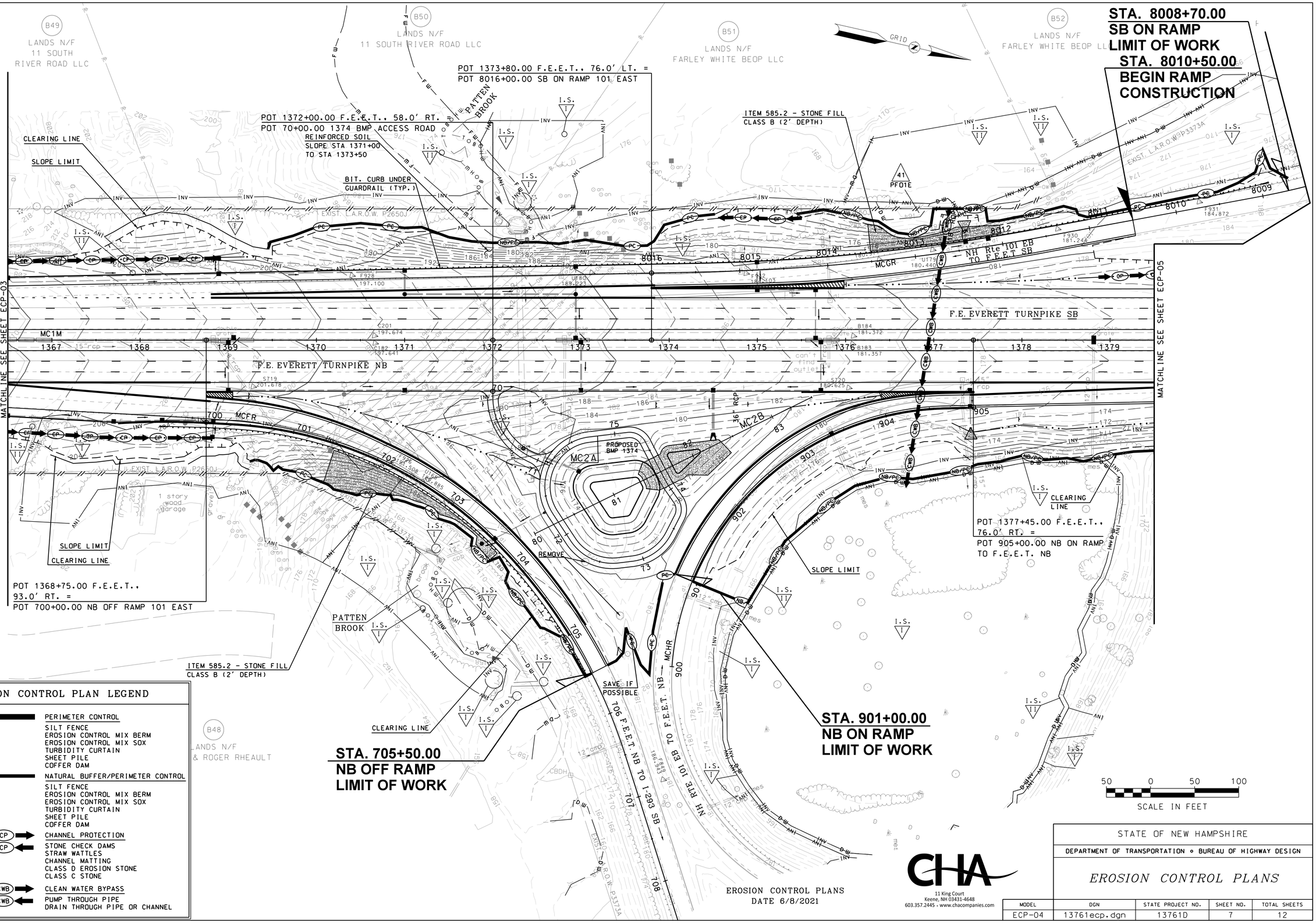

EROSION CONTROL PLAN LEGEND

PC	PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
NB/PC	NATURAL BUFFER/PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
CP	CHANNEL PROTECTION STONE CHECK DAMS STRAW WATTLES CHANNEL MATTING CLASS D EROSION STONE CLASS C STONE
CWB	CLEAN WATER BYPASS PUMP THROUGH PIPE DRAIN THROUGH PIPE OR CHANNEL

EROSION CONTROL PLANS
DATE 6/8/2021

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DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

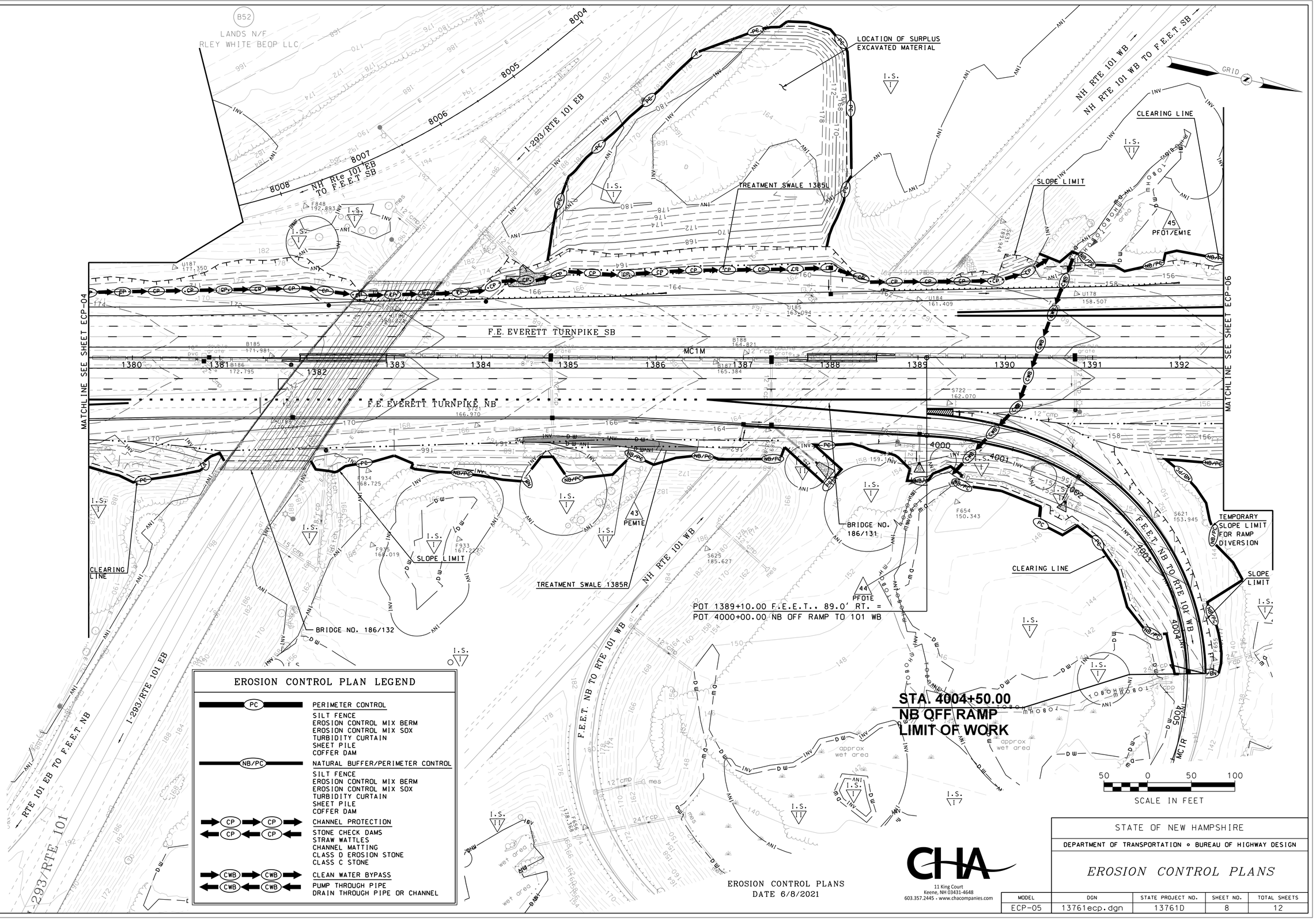
MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ECP-04	13761ecp.dgn	13761D	7	12

NUMBER	DESCRIPTION	STATION	DATE
	REVISIONS AFTER PROPOSAL	STATION	DATE

SDR PROCESSED NHDOT DATE 1/12
NEW DESIGN P.R.P. DATE 6/21
SHEET CHECKED J.P. DATE 6/8/21
AS BUILT DETAILS DATE

CHA PROJ. NO. 057314.000

FILE NAME - V:\PROJECTS\ANY\05\057314.000\CADD_MSTN\PRJCUTSHEET\13761ECP.DGN
PLOTTED DATED 6/8/2021



EROSION CONTROL PLAN LEGEND

- PC — PERIMETER CONTROL
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- NB/PC — NATURAL BUFFER/PERIMETER CONTROL
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- CP — CHANNEL PROTECTION
  - STONE CHECK DAMS
  - STRAW WATTLES
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EROSION CONTROL PLANS
DATE 6/8/2021

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EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ECP-05	13761ecp.dgn	13761D	8	12

		DATE
SOR PROCESSED	NHDOT	1/12
NEW DESIGN	P.R.P.	6/21
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AS BUILT DETAILS		DATE

NUMBER	DATE	STATION	STATION	DESCRIPTION

CHA PROJ. NO. 057314.000

PLOTTED DATED 6/8/2021

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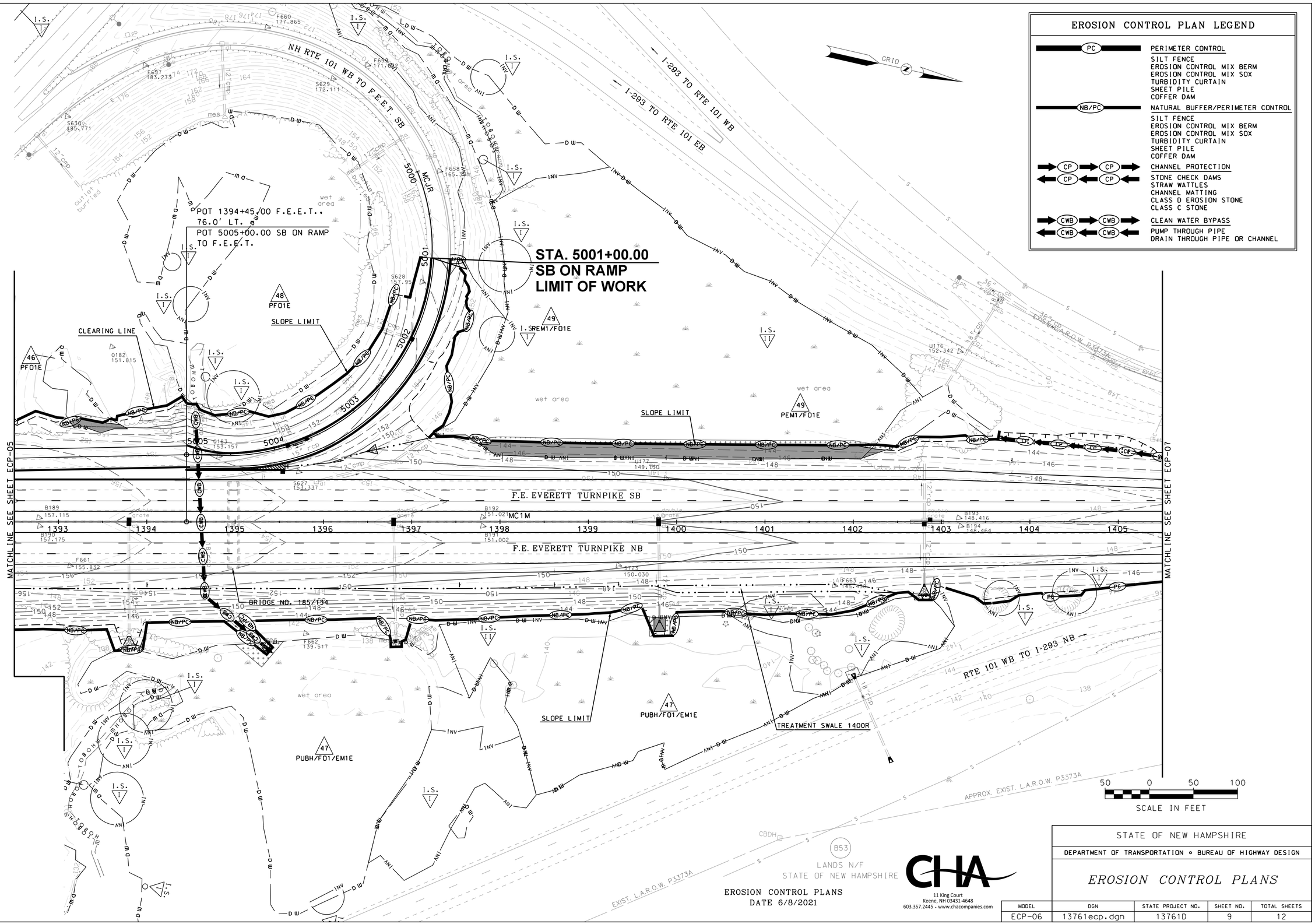

DESCRIPTION	STATION	STATION	DATE	NUMBER
REVISIONS AFTER PROPOSAL				

CHA PROJ. NO. 057314.000

SDR PROCESSED	NHDOT	DATE 1/12
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EROSION CONTROL PLANS
DATE 6/8/2021

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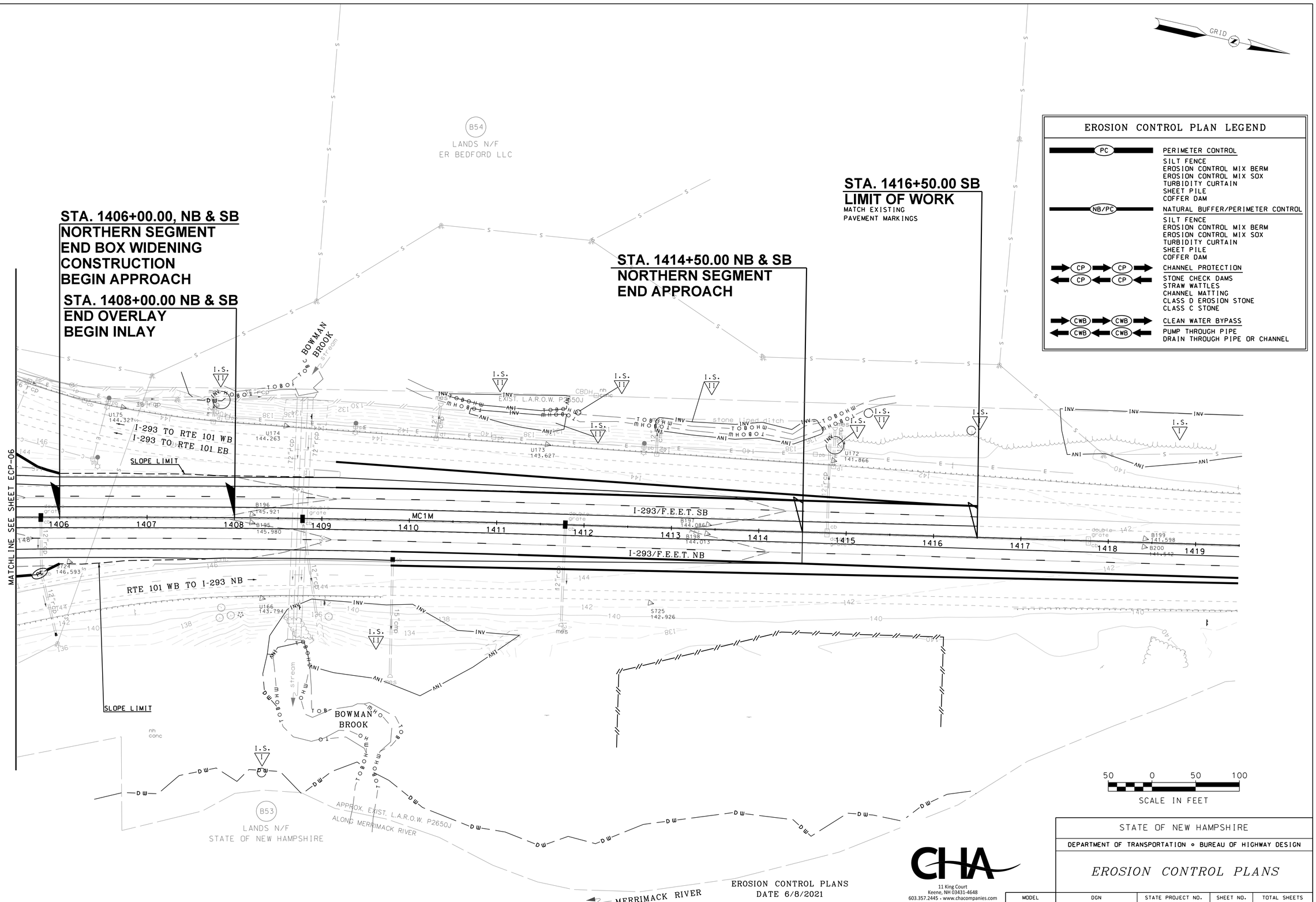
EROSION CONTROL PLANS

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ECP-06	13761ecp.dgn	13761D	9	12



EROSION CONTROL PLAN LEGEND

PC	PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
NB/PC	NATURAL BUFFER/PERIMETER CONTROL
	SILT FENCE
	EROSION CONTROL MIX BERM
	EROSION CONTROL MIX SOX
	TURBIDITY CURTAIN
	SHEET PILE
	COFFER DAM
CP CP / CP CP	CHANNEL PROTECTION
	STONE CHECK DAMS
	STRAW WATTLES
	CHANNEL MATTING
	CLASS D EROSION STONE
	CLASS C STONE
CWB CWB / CWB CWB	CLEAN WATER BYPASS
	PUMP THROUGH PIPE
	DRAIN THROUGH PIPE OR CHANNEL

50 0 50 100

SCALE IN FEET

NUMBER	DATE	STATION

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SDR PROCESSED NHDOT DATE 1/12
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STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

EROSION CONTROL PLANS
DATE 6/8/2021

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MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
ECP-07	13761ecp.dgn	13761D	10	12

CHA PROJ. NO. 057314.000

PLOTTED DATED 6/8/2021

FILE NAME - V:\PROJECTS\ANY\K5\057314.000\CADD_MSTN\PRJCUTSHEET\13761ECP.DGN

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
   1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
   1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
   1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
   1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
   1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WQ 1500 REQUIREMENTS (HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM)
   1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.

2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
   2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
   2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
   2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
   2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
      (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
      (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
      (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
      (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
   2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
   2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
   2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
   2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30" AND MAY 1" OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
      (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
      (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
      (C) AFTER NOVEMBER 30" INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
      (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WQ 1505.02 AND ENV-WQ 1505.05.
      (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
   3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
   3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
   3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
   3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
   3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.

4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
   4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
   4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
   4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1" THROUGH NOVEMBER 30", OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.

5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
   5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
   5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
   5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
   5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
   5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.

6. PROTECT SLOPES:
   6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
   6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
   6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
   6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.

7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
   7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
   7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.

8. PROTECT STORM DRAIN INLETS:
   8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
   8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
   8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
   8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.

9. SOIL STABILIZATION:
   9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
   9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
   9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR. IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
   9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.

10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
    10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WQ 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
    10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
    10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
    11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
    11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
    11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
    11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
    11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
    11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
    11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
    11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
    11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
    12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500: ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
    12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
    12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
    12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
    12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
    12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
    12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.

13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
    13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
    13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
    13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
    13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.

14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
    14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
    14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
    14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WQ 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES'	YES'	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

EROSION CONTROL PLANS
DATE 6/8/2021

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN
EROSION & SEDIMENT CONTROL PLANS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	761erosstrat.dgn	13761D	11	12

13761D – TRAFFIC CONTROL SEQUENCING AND CONSTRUCTION SEQUENCE

TEMPORARY LANE USE (TYPICAL):

F.E. EVERETT TURNPIKE = 4' SHOULDER / 12' TRAVEL LANE / 12' TRAVEL LANE / 4' SHOULDER
RAMPS = 2' SHOULDER / 12' TRAVEL LANE / 2' SHOULDER

PHASE 1 A

TRAFFIC:

- SHIFT F.E. EVERETT TURNPIKE NORTHBOUND TRAFFIC TOWARDS EXISTING OUTSIDE EDGE OF PAVEMENT. SHIFT F.E. EVERETT TURNPIKE SOUTHBOUND TRAFFIC TOWARDS MEDIAN ON THE EXISTING PAVEMENT.

CONSTRUCTION:

- ABANDON BRIDGE 185/134 AT STA. 1395+00.
- CONSTRUCT DRAINAGE ACROSS TURNPIKE UTILIZING SHORT-TERM TRAFFIC CONTROL.
- SHIM EXISTING MEDIAN SHOULDERS TO 2% AS NEEDED FOR FUTURE TRAFFIC USE.

PHASE 1

TRAFFIC:

- AT THE BEGINNING OF EACH SEASON, SHIFT F.E. EVERETT TURNPIKE NORTHBOUND AND SOUTHBOUND TRAFFIC TOWARDS THE MEDIAN ON THE EXISTING PAVEMENT.
- FOR THE WINTER SHUTDOWN, SHIFT F.E. EVERETT TURNPIKE NORTHBOUND AND SOUTHBOUND TRAFFIC BACK TO EXISTING PATTERNS.
- RELOCATE TRAFFIC SIGNS AS NEEDED FOR TCP PHASE 1 OPERATION.
- SHIFT RAMP TRAFFIC ON TO TEMPORARY RAMPS ONCE THEY ARE CONSTRUCTED.

CONSTRUCTION:

SEASON 1 (2022)

- RELOCATE UTILITY POLES.
- CONSTRUCT TEMPORARY RAMPS.
- REMOVE EXISTING OVERHEAD SIGN / INSTALL TEMPORARY SIGNS.
- BLAST ROCK SB STA. 1353+00 TO STA. 1362+25, NB STA. 1353+50 TO STA. 1361+75. (NOTE: BLASTING MAY OCCUR ON BOTH NB AND SB ALTERNATING BETWEEN BARRELS)
- EXCAVATE / CONSTRUCT EMBANKMENT FOR PERMANENT WIDENING.

SEASON 2 (2023)

- RELOCATE EXISTING LIGHTING TO PROPOSED LOCATIONS.
- CONSTRUCT BOX WIDENING OF NEW LANES AND SHOULDERS. PAVE BASE AND BINDER. AREAS ADJACENT TO RAMPS WILL NEED TO BE CONSTRUCTED WITH TRAFFIC SHIFTED BACK TO PERMANENT RAMPS ONCE THEY ARE CONSTRUCTED.
- CONSTRUCT WATER QUALITY BASINS AND DRAINAGE.
- CONSTRUCT PERMANENT RAMPS.
- INSTALL GUARDRAIL.

PHASE 2

TRAFFIC:

- SHIFT F.E. EVERETT TURNPIKE NORTHBOUND AND SOUTHBOUND TRAFFIC TOWARDS NEW OUTSIDE EDGE OF PAVEMENT.

CONSTRUCTION:

- CONSTRUCT REMAINING DRAINAGE WITHIN WORK ZONE ADJACENT TO MEDIAN.
- CONSTRUCT NEW MEDIAN BARRIER 1334+00 TO 1364+85.
- CONSTRUCT PIER PROTECTION TYPE II (54" SINGLE SLOPE CONCRETE BARRIER, SINGLE FACED) AND TRANSITIONS AT THE THREE BRIDGE LOCATIONS.
- MILL AND PAVE (2 1/2") PORTION OF MEDIAN AND TRAVEL LANES.

PHASE 3

TRAFFIC:

- SHIFT F.E. EVERETT TURNPIKE NORTHBOUND AND SOUTHBOUND TRAFFIC AS NECESSARY USING SHORT-TERM TRAFFIC CONTROL.

CONSTRUCTION:

- CONSTRUCT REMAINING PAVEMENT AREAS AS SHOWN ON PLANS.
- PAVE (2") WEARING COURSE OVER RAMPS.
- REMOVE REMAINING TEMPORARY RAMPS AND REGRADE.
- REMOVE TEMPORARY SHIM PAVEMENT ON SHOULDERS.
- INSTALL/ADJUST REMAINING GUARDRAIL.
- OVERLAY (2") WEARING COURSE OVER ENTIRE WIDTH OF TURNPIKE.
- INSTALL FINAL SIGNING AND PAVEMENT MARKINGS.

NOTES:

1. CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKINGS WHERE THEY INTERFERE WITH TEMPORARY TRAFFIC CONTROL LANE CONFIGURATIONS.
2. CONTRACTOR SHALL UTILIZE 2010 STANDARD PLANS FOR ROAD CONSTRUCTION PAVEMENT MARKING DETAILS PM-2, PM-3, PM-4, PM-5, PM-6, PM-7, PM-8, PM-9 AND PM-10 FOR LAYOUT, WIDTH AND COLOR WHEN PAVEMENT MARKINGS ARE NOT DESIGNATED ON TRAFFIC CONTROL PLANS.

EROSION CONTROL PLANS
DATE 6/8/2021

CHA
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Keene, NH 03431-4648
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NUMBER	DATE	STATION	DESCRIPTION
			REVISIONS AFTER PROPOSAL

SDR PROCESSED	NHDOT	DATE 1/12
NEW DESIGN	P.R.P.	DATE 6/21
SHEET CHECKED	J.P.	DATE 6/8/21
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN
TRAFFIC CONTROL SEQUENCING AND CONSTRUCTION SEQUENCE NOTES

MODEL	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
TCP-SE	13761tcpseq_ero.dgn	13761D	12	12