STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: April 17, 2023

FROM: Joshua Brown
Wetlands Program Analyst

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT: Dredge & Fill Application
Plaistow-Kingston, 10044E

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. The project a portion of a larger 6-mile long project (10044B) that is located along NH Route 125 in the Towns of Plaistow and Kingston, NH. Proposed work in this contract (E) begins approximately 500 feet north of the Old County Road intersection and ends approximately 500 feet south of the Hunt Road/Newton Junction Road intersection. Proposed work includes reconstructing NH Route 125 from a two-lane section to a three-lane section that includes a two-way center left-turn lane throughout. The project also includes side road improvements, intersection consolidation and realignments, drainage work, and the addition of stormwater treatment areas. The overall purpose of the project is to improve capacity and safety, relieve traffic congestion, and enhance safe and efficient access to and from abutting properties along the corridor.

This project was reviewed at the Natural Resource Agency Coordination Meetings on March 20, 2019, August 19, 2020, & November 18, 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 for this contract was previously completed as a part of the earlier contracted work. Correspondence between NHDES and NHDOT on previous mitigation is included in this application package.

The lead people to contact for this project are Matthew Lampron, Bureau of Highway Design (271-3226 or Matthew.D.Lampron@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or Andrew.M.OSullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher # 716038) in the amount of $6,899.20.

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.

JRB;
cc:
BOE Original
Towns of Plaistow and Kingston (4 copies via certified mail)
David Trubey, NHDHR (Cultural Review Within)
Mike Dionne & Kevin Newton, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Jeanie Brochi, USEPA (via electronic notification)
Michael Hicks, USACE (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

S:\Environment\PROJECTS\PLAISTOW\10044 (B, D, E, F, G)\10044E\Wetland\Application\Application Submission Documents\WETAPP - Coverletter.doc

NH Route 125 Improvements Project

Plaistow-Kingston 10044E

FHWA Project # X-A000(378)

NHDES WETLANDS PERMIT APPLICATION

Submitted for:

NH Department of Transportation
7 Hazen Drive
Concord, NH 03302

Prepared by:

GM2 Associates, Inc.
197 Loudon Road, Suite 310
Concord, NH 03301

April 2023

TABLE OF CONTENTS

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: NHDOT **TOWN NAME:** Plaistow & Kingston

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): Blanding's turtle, spotted turtle, wood turtle, black racer ○ NHB Project ID #: NHB22-3323	☒ 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): • 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:	☐ 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): 2,176 acres	

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 project involves improvements to a 1.8-mile segment of NH Route 125 in the towns of Kingston and Plaistow. It includes the Contract E portion of a larger, 6-mile project (NHDOT Project No. 10044B) along NH Route 125. Construction on all other contracts (C, D, F, and G) is complete. Contract E begins approximately 500 feet north of the Old County Road intersection and ends approximately 500 feet south of the Hunt Road/Newton Junction Road intersection. Proposed work includes reconstructing NH Route 125 from a two-lane section to a three-lane section that includes a two-way center left-turn lane throughout. The project also includes side road improvements, intersection consolidation and realignments, drainage work, and the addition of stormwater treatment areas. The overall purpose of the project is to improve capacity and safety, relieve traffic congestion, and enhance safe and efficient access to and from abutting properties along the corridor.

The project will involve a total wetland resource area impact of approximately 17,248 square feet (0.40 acres). Approximately 15,413 square feet (0.35 acres) of permanent impact will result from filling and grading activities associated with roadway widening and intersection realignments, and drainage work. Approximately 1,835 square feet (0.04 acres) of temporary impact during construction is proposed. In addition, the project will involve approximately 29 linear feet of permanent impact and approximately 21 linear feet of temporary impact to the Little River banks and channel from extending the existing culvert at the NH Route 125 crossing.

SECTION 3 - PROJECT LOCATION

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

ADDRESS: NH Route 125

TOWN/CITY: Plaistow and Kingston

TAX MAP/BLOCK/LOT/UNIT: N/A

US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Little River
☐ N/A

(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places): 42.86743° North
71.08948° 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: NH Department of Transporation		
MAILING ADDRESS: PO Box 483		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: matthew.d.lampron@dot.nh.gov		
FAX:	PHONE: 603-271-3226	
ELECTRONIC COMMUNICATION: By initialing here: MDL, 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.: Riordan, Jennifer M.		
COMPANY NAME: GM2 Associates Inc.		
MAILING ADDRESS: 197 Loudon Road, Suite 310		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03301
EMAIL ADDRESS: jriordan@gm2inc.com		
FAX:	PHONE: 603-856-7854	
ELECTRONIC COMMUNICATION: By initialing here JMR, 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 resources were delineated in accordance with Env-Wt 400. Additional information is provided in the enclosed Wetland Delineation Report.

Env-Wt 500: The project meets the criteria of Env-Wt 527 (Public Highways). The project has been design to avoid and minimize wetland impacts where possible. Wetland impacts have been significantly reduced from the original project layout that was permitted in 2004. A summary of the project's history is provided in the enclosed supplemental narrative.

Env-Wt 600: N/A - The project is not within a coastal area.

Env-Wt 700: N/A - There are no prime wetlands within or adjacent to the project.

Env-Wt 900: The project involves a culvert extension on an existing Tier 3 crossing. The additional information required by Env-Wt 900 is enclosed.

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: 11 Day: 18 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	15,325		☐	1,373		☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland	21		☐	117		☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface Water	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River	63	5	☐	289	8	☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River	4	24	☐	56	13	☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		15,413	29		**1,835**	**21**	

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):	17,248 SF	× $0.40 =	$	6,899.20
Seasonal docking structure:	SF	× $2.00 =	$	
Permanent docking structure:	SF	× $4.00 =	$	
Projects proposing shoreline structures (including docks) add $400 =			$	

Total =	$ 6,899.20
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =	$ 6,899.20

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: MDL JMR	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: MDL JMR	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: MDL JMR	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: MDL JMR	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):	PRINT NAME LEGIBLY: Matthew Lampron	DATE: 3/6/23
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE): Jennifer Riordan	PRINT NAME LEGIBLY: Jennifer Riordan	DATE: 3/6/23

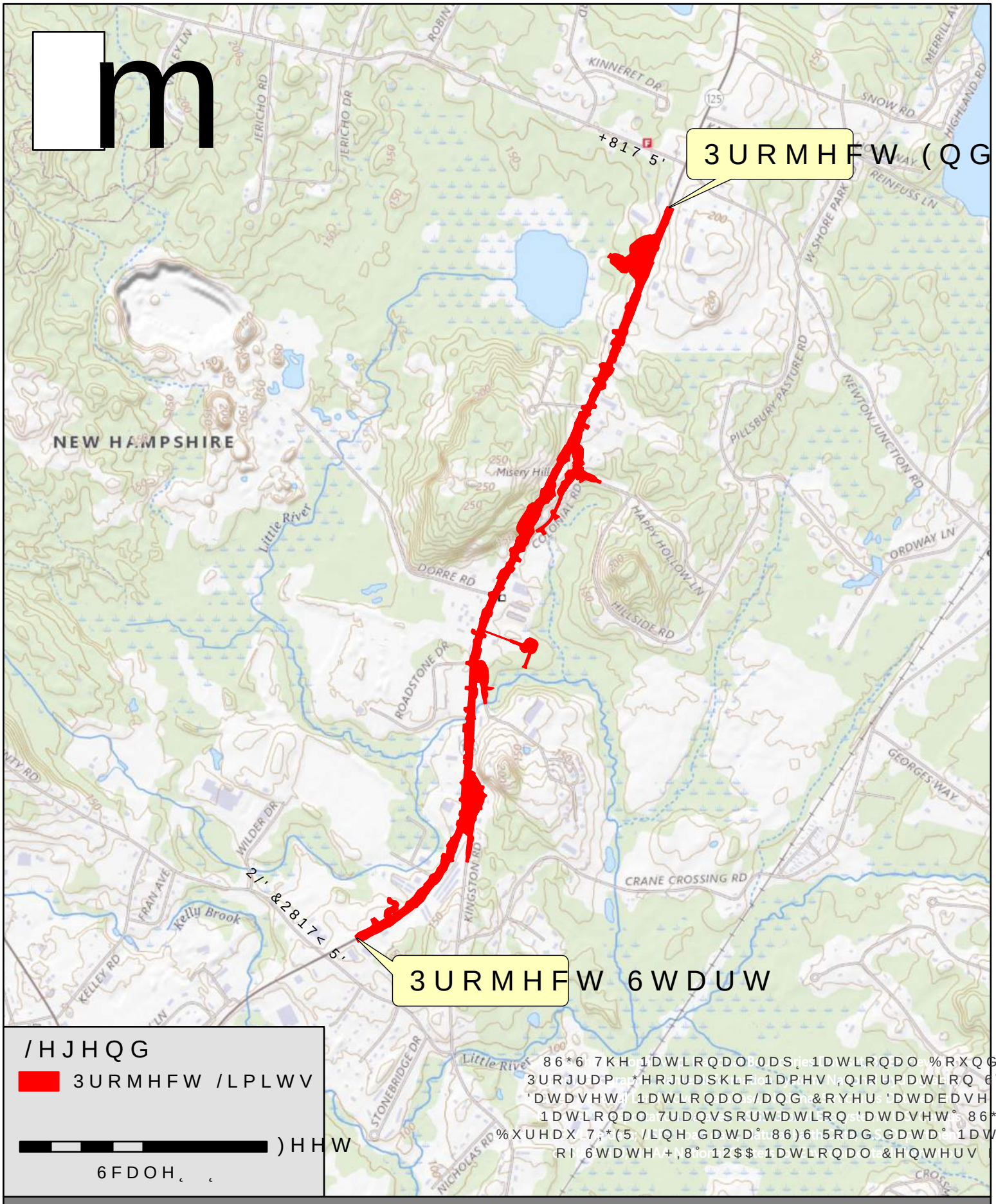
SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))

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: _____	PRINT NAME LEGIBLY: Exempt - State Agency
TOWN/CITY:	DATE:

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”.



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Supplemental Narrative

Project Description

The project involves improvements to a 1.8-mile segment of NH Route 125 in the towns of Kingston and Plaistow. It includes the Contract E portion of a larger, 6-mile project (NHDOT Project No. 10044B) along NH Route 125. Construction on all other contracts (C, D, F, and G) is complete. This is the final segment to be constructed as part of Project 10044B and will tie into the previously constructed improvements located to the north (Contract C) and to the south (Contract D).

The project being proposed under this permit application (Contract E) begins approximately 500 feet north of the Old County Road intersection and ends approximately 500 feet south of the Hunt Road/Newton Junction Road intersection. Proposed work includes reconstructing NH Route 125 from a two-lane section to a three-lane section that includes a two-way center left-turn lane throughout. The project also includes drainage work, the addition of five stormwater treatment areas, and the following side road improvements and intersection consolidations/realignments:

- Kingston Road and Granite Road: consolidate roads and realign the Kingston Road intersection with NH 125
- Diamond Oaks Boulevard: adjust to align with Roadstone Drive and improve intersection Geometry
- Roadstone Drive: widen the southbound shoulder of NH 125 to accommodate trucks turning right onto Roadstone Drive
- Dorre Road: widen the southbound shoulder of NH 125 to accommodate trucks turning right onto Dorre Road
- Colonial Road and Happy Hollow Lane: close southern connection of Colonial Road to NH 125 due to poor site distance and intersection geometry and relocate Happy Hollow Lane/Colonial Road intersection with NH 125.

The overall purpose of the project is to improve capacity and safety, relieve traffic congestion, and enhance safe and efficient access to and from abutting properties along the corridor.

Project Background

As noted above, the current project is the final segment of the 10044B project. The overall 10044B project (FHWA Project MGS-STP-T-X-5375(010)) was approximately 6 miles in length and extended along NH Route 125 from the East Road/Joanne Drive intersection in Plaistow to the NH Route 111 (Main Street) intersection in Kingston. A NEPA Environmental Assessment was completed for the entire 10044B project in 2004-2005 and a NHDES Wetlands Permit was obtained (NHDES Permit #2004-00763).

Permit #2004-00763 allowed for approximately 4.49 acres of palustrine and riverine wetlands impact for the 6-mile project. As mitigation for this impact, NHDOT provided 80.8 acres of conservation land, including restoration of two wetlands. A permit amendment request was submitted in 2015 for the 10044G contract to allow for an additional 0.66 acres of wetland impact. This additional impact was mitigated via an ARM fund payment of $135,507.71.

Under Permit #2004-00763, approximately 1.95 acres of wetland impact was proposed for Contract 10044E. The project originally consisted of a proposed five-lane roadway design, with two lanes in each direction and a raised median. Since the original project was designed, future year traffic projections and operational analyses have been revised and it was determined that the five-lane layout was no longer necessary since traffic growth was less than previously predicted. The design was revised to include a three-lane roadway (two travel lanes and a two-way center turn lane). This resulted in a narrower project

footprint and lowered the proposed wetland impacts. Contract 10044E now includes approximately 0.35 acres of permanent wetland impact.

Wetland Impacts

The project will involve a total wetland resource area impact of 17,248 square feet (0.40 acres), as well as 50 linear feet of perennial stream impact (banks and channel).

Approximately 15,413 square feet (0.354 acres) of permanent impact will result from filling and grading activities associated with roadway widening and intersection realignments, and drainage work. Approximately 1,835 square feet (0.042 acres) of temporary impact during construction is proposed. In addition, the project will involve approximately 29 linear feet of permanent impact and approximately 21 linear feet of temporary impact to the Little River banks and channel from extending the existing culvert at the NH Route 125 crossing.

The project will involve approximately 7.3 acres of clearing. Most of this is along the edge of the existing road right-of-way, although some clearing will occur further from the road for stormwater treatment BMP construction.

Wetland Impacts by Town

	Permanent		Temporary	
	SF	**LF**	**SF**	**LF**
Plaistow				
Forested Wetland	1,403	-	0	-
Emergent Wetland	4	-	0	-
Perennial Stream	0	0	0	0
Bank – Perennial Stream	0	0	0	0
Total	**1,407**	**0**	**0**	**0**
Kingston				
Forested Wetland	13,922	-	1,373	-
Emergent Wetland	17	-	117	-
Perennial Stream	63	5	289	8
Bank – Perennial Stream	4	24	56	13
Total	**14,006**	**29**	**1,835**	**21**
Entire Project				
Total	**15,413**	**29**	**1,835**	**21**

The table on the following page provides a summary of the previously permitted wetland impacts for Contract 10044E under NHDES Permit #2004-00763 compared to the currently proposed impacts. As discussed above, impacts were reduced primarily by narrowing the footprint of the project by reducing the roadway layout from 5 lanes to 3 lanes.

Comparison of Wetland Impacts for Contract 10044E
Currently Proposed vs. Permitted Amount under Permit #2004-00763

Wetland ID (current)	Wetland ID (previous)	Currently Proposed Permanent Wetland Impacts (sq. ft.)	Permanent Wetland Impacts under Permit #2004-00763 (sq. ft.)	Difference
1	BBB	4	0	+4
N/A	DA	0	1,825	-1,825
3	AAA	797	11,464	-10,667
4	ZZ	1,833	10,094	-8,261
5	L	6,228	15,200	-8,972
6	GR	80	0	+80
7	YY	0	3,359	-3,359
9 (Little River)	M	63	(included under Wetland 10)	+63
10	M	2,491	9,306	-6,815
10A (Little River Bank)	M	4	(included under Wetland 10)	+4
11	FR5	0	24,455	-24,455
13	N & O	966	2,271	-1,305
14	XX	736	4,216	-3,480
15	ISO1	982	161	+821
16	P	884	645	+239
17	WW	256	41	+215
18	Q	53	1,975	-1,922
20	VV	36	0?	+36
Total		**15,413 sq. ft. (0.354 ac.)**	**85,012 sq. ft. (1.95 ac.)**	**-69,599 sq. ft. (-1.60 ac.)**

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: NHDOT **TOWN NAME:** Plaistow & Kingston

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.

Wetland impacts have been avoided and minimized where possible during the project design. Most of the impacts are located along the edges of wetlands, adjacent to the existing roadway and will affect only a small percentage of the overall wetland area. Two of the smaller wetlands will have more substantial impacts relative to the overall wetland area (Wetlands 5 and 14). In addition, Wetland 15 is a small, isolated wetland that will be entirely impacted by the project.

The proposed impacts are necessary to construct the roadway improvements to meet the project's purpose of improving safety and capacity. Stormwater BMPs were designed to avoid wetland impacts. In a few locations, the placement of stone in wetlands is necessary for erosion protection at drainage outlets.

The 10044E project was originally permitted under NHDES Permit #2004-00763, as part of a larger 6-mile improvement along NH Route 125. Under this permit, approximately 1.95 acres of wetland impact was proposed for the Contract E segment (10044E). The design consisted of a proposed 5-lane roadway, with 2 lanes in each direction and a raised median. Since the original design was proposed, future year traffic protections and operational analyses have been revised and it was determined that the 5-lane layout was no longer necessary since traffic growth was less than previously predicted. The design was revised to include a 3-lane roadway and the footprint of the project was reduced. This substantially lowered the proposed permanent wetland impacts from approximately 1.95 acres to approximately 0.35 acres.

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.

N/A - The project does not impact any marshes.

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 project is not expected to disrupt existing hydrologic connections between wetlands or stream systems. Existing culverts will be extended where fill slopes impact wetlands at the edge of the roadway.

The culvert at the Little River crossing on NH Route 125 will be extended 3 feet on the east side of the road. Replacement of this culvert with a structure that is compliant with the stream crossing rules was considered during preliminary design but was not selected as the proposed action due to cost. Replacement of the NH Route 125 culvert with a structure that has a larger hydraulic opening would have downstream impacts. As a result, the existing 48-inch culvert that carries the Little River under Diamond Oaks Boulevard (located just over 200 feet downstream of the NH Route 125 crossing) would also need to be replaced with a larger structure.

The culvert extension will maintain the existing hydrologic connection of the Little River under NH Route 125 and no impacts on the overall stream system are anticipated.

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.

There are no exemplary natural communities or vernal pools within the project area. The segment of the Little River that crosses through the project area is identified as providing important fish habitat (based on review of the Wildlife Action Plan data in the WPPT mapper). The stream is listed as a warmwater fishery that contains redfin pickerel. The project will involve a small amount of impact to the Little River from extension of the culvert under NH Route 125 (63 SF of permanent impact to the channel is proposed). Additional temporary impacts will occur from dewatering activities during construction. BMPs will be used to minimize downstream water quality impacts during construction.

Several state listed reptile species are known to occur in the vicinity of the project corridor. Coordination with NH Fish & Game occurred and several conservation measures were recommended (refer to enclosed NHF&G correspondence) NHDOT evaluated the recommendations and incorporated them into the project design and contract documents where practicable. NHF&G recommended that sumps not be included in catch basins or outlet control structures when located in grassy areas. NHDOT evaluated this recommendation and determined that for engineering, maintenance, and water quality issues, the catch basin sumps would still be included as part of the design.

Consultation with the US Fish and Wildlife Service (USFWS) regarding potential impacts to northern long-eared bat (NLEB) occurred and it was determined that the project may affect but is not likely to adversely affect NLEB. An acoustic survey was conducted in 2022 and the results indicated that NLEB was considered unlikely to be present at the survey sites. The following conservation measures are proposed to avoid and minimize impacts to bat species: a NLEB flyer will be shared with contractors; sightings of dead or sick bats will be reported to NHDOT; and prior to construction, project sequencing will be reviewed to determine if tree clearing can occur during the non-active season.

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.

No impacts to navigation are expected since there are no navigable waters within the project area.

The wetlands and streams within the project area are not used for recreation so no impacts are anticipated.

Temporary traffic disruptions will occur during construction but no long-term impacts are expected.

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.

There are no FEMA floodplains within the project area, but all of the wetlands provide some level of flood storage since they receive and retain runoff from the surrounding developed areas and uplands.

Impacts to these wetlands were minimized by reducing the footprint of the project from 5 lanes to 3 lanes. This substantially reduced the proposed amount of fill required to construct the project and the total area of wetland impact was reduced by approximately 1.6 acres. As currently proposed, the majority of the wetland impacts are along the edges of the wetlands, which generally provide flood storage functions as a lower level compared to the interior portions.

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 large wetland located along the Little River (Wetland 13) is a riverine forested wetland system of high ecological integrity. The project will only impact a few small areas along the edge of this wetland (approximately 966 square feet in total) and the higher quality, interior portion of the wetland will remain undisturbed.

The 5-lane roadway layout would have resulted in approximately 2,271 square feet of permanent impact to Wetland 13. The proposed 3-lane layout substantially reduces this impact amount. The 5-lane roadway would have also resulted in approximately 3,359 square feet of impact to riverine wetlands on the west side of NH Route 125 (Wetland 7). Under the current design, no impacts to the Little River or its associated wetlands are proposed on the west side of NH Route 125.

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.

Wetlands 3, 4, 5, 9, 10, and 13 were all determined to provide groundwater recharge functions. Impacts to these wetlands were minimized by reducing the footprint of the project from 5 lanes to 3 lanes. The smaller footprint results in a decrease of almost 36,000 square feet of permanent impact to these six wetland areas.

As currently proposed, the project will impact the edges of these wetlands along the existing roadway. Wetland 5 will have a slightly larger amount of impact relative to the overall size of the wetland due to the relocation of Granite Road. Overall, the proposed impact areas are minor compared to the overall size of the wetland systems and adverse impacts to drinking water supplies and groundwater aquifer levels are not anticipated.

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 project involves a small amount of impact to the Little River from the proposed 3-foot extension of the culvert under NH Route 125. Permanent channel impacts are limited to approximately 5 linear feet on the east side of the road. Additional temporary impacts will occur during construction but these impacts will be restored once work is complete. The proposed impact will not adversely affect the overall ability of the stream channel to handle runoff since it is located adjacent to the existing culvert and the remainder of the stream will be left undisturbed.

Impacts to the Little River were minimized by reducing the proposed width of NH Route 125. The proposed 5-lane layout would have involved impacts to the Little River on both sides of NH Route 125.

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.

N/A - The project does not involve shoreline structures

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 project does not involve 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 project does not involve 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 project does not involve 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 project does not involve 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 project does not involve 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 Highway Methodology Workbook Supplement
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: JENNIFER RIORDAN (CWS #269)
DATE OF ASSESSMENT: 11/11/2022
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.

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: NHDOT **TOWN NAME:** Plaistow & Kingston

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. The project is a roadway improvements project that does not involve the construction of a water accesss structure.

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.*

The project involves less than one acre of permanent wetland impact. There are PRAs within the project area due to the presence of state-listed reptile species identified in the NHB report. NHF&G was contacted and provided several recommendations for minimizing impacts to these species.

There are no other properties reasonably available to NHDOT that could be used to achieve the project's purpose since the project involves improvements to an existing roadway. Impacts have been substantially decreased from the original design by reducing the roadway layout from 5 lanes to 3 lanes (discussed under Section 4).

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 impacts have been avoided and minimized where possible during the project design. Most of the impacts are located along the edges of wetlands, adjacent to the existing roadway and will affect only a small percentage of the overall wetland area.

The 10044E project was originally permitted under NHDES Permit #2004-00763, as part of a larger 6-mile improvement along NH Route 125. Under this permit, approximately 1.95 acres of permanent wetland impact was proposed for the Contract E segment (10044E). The design consisted of a proposed 5-lane roadway. It has since been determined that the 5-lane layout is no longer necessary to meet the project purpose and the design was revised to include a 3-lane roadway. This reduced the footprint of the project and lowered the proposed permanent wetland impact from approximately 1.95 acres to approximately 0.35 acres.

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*.

A functional assessment was completed for the wetlands that will be impacted by the project (functional assessment forms are enclosed).

The project will not result in any substantial impacts to wetland functions since the majority of the impacts are located along the edges of the wetlands, adjacent to the existing roadway, and only a small percentage of the overall wetland will be lost. Two of the smaller wetlands will have more substantial impacts relative to the overall wetland area (Wetlands 5 and 14). In addition, one small isolated wetland (Wetland 15) will be entirely impacted by the project. This wetland does not provide any functions at a principal level due to its small size and the surrounding roadways/developments.

In general, the wetlands within the project area provide flood storage, groundwater recharge, nutrient trapping, sediment trapping, and wildlife habitat. Most of the wetlands provide these functions at a lower level since they have been previously impacted by surrounding development. The proposed impacts are generally located at the edges of these wetlands and the interior, higher quality portions will remain undisturbed. The wetland systems in the project corridor provide more functions further from NH Route 125, particularly Wetland 13 (associated with the Little River). Since the higher quality portions of the wetlands are located beyond the project limits, no substantial loss of wetland functions is anticipated.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: March 20, 2019
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Matt Urban
Sarah Large
Andrew O'Sullivan
Ron Crickard
Arlene Allen
Marc Laurin
Bob Juliano
Jason Tremblay
Keith Cota
Don Lyford
Rick Faul
Andrew Czachor
Maggie Baldwin
Tobey Reynolds
Josh Lafond
Kathy Corliss
Shaun Flynn

ACOE
Mike Hicks

Federal Highway
Jamie Sikora

NHDES
Lori Sommer
Eben Lewis
Chris Williams

NHF&G
Carol Henderson
Heidi Holman
Brett Ferry

NHB
Amy Lamb

Consultants/Public Participants
Mike Leach
Gerard Fortin
Adam Stockin
Jonathan Pitre
Seth Hill
Brian Colburn
Christine Perron
Burr Phillips
Greg Howard

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

(When viewing these minutes online, click on a project to zoom to the minutes for that project)

required information. L. Sommer asked who would own the property or easement on the parcel. Jim replied that his preference would be to have Bear Paw be the primary holder and Barnstead be listed as a secondary easement holder.

L. Sommer suggested a meeting be scheduled to discuss the process. The question was asked if the easement would need to be in place at the time the permit application would be submitted for the project. It was mentioned that the permit could be conditioned, allowing NHDOT to finalize the transaction. M. Urban asked if this opportunity falls through, if the permit could be conditioned that the Department would then revert back to an ARM fund payment. L. Sommer said yes. L. Sommer said the budget should be nailed down quickly for this effort.

M. Hicks asked if all the streams on the project were unnamed, R. Faul said yes. M. Urban showed L. Sommer the impacts to the intermittent stream. L. Sommer and G. Infascelli discussed that the impacts look to be more than what would fall under a routine roadway activity, so they would require mitigation.
Amy Lamb noted that the NHB search indicated that the Small Whorled Pogonia and Loon were present within the project area. R. Crickard stated that a site walk of the project did not locate any Small Whorled Pogonia, and that coordination with Kim Tuttle at NH Fish & Game has not been completed. Ron will reach out to Kim about the Loon. A. Lamb noted the proximity of the project to the Loon nesting area and that noise during construction may be a concern.

The US Fish and Wildlife IPAC report noted there were potential for small whorled pogonia and Northern long eared bat within the project limits. Small whorled pogonias were not observed during two site visits, and clearing restrictions are anticipated to protect the bats habitat.

C. Henderson mentioned Fish and Game reallocates money through G&C to purchase properties. R. Crickard indicated this procedure would be new to the Department.
L. Sommer asked how the coordination will work on the potential mitigation opportunity with Barnstead and Bear Paw. R. Crickard asked for an example of a contract that NHDES uses for such opportunities through the ARM grant program.

G. Infascelli discussed impacts to a stream on the previous Barnstead project, the Stockbridge Corner Road 14121D project. G. Infascelli indicated that he has coordinated with DOT on this location previously indicating that stone fill was placed both upstream and downstream in areas permitted as temporary impacts. The Department hoped that the stone would naturally fill in with sediment. G. Infascelli asked if this could be addressed under the project discussed today. Tobey Reynolds said that the Department will take a look at it.

This project has been previously discussed at the 2/17/2016 and 9/20/2017 Monthly Natural Resource Agency Coordination Meetings.

Plaistow-Kingston, #10044E (X-A000(378))
This project entails re-evaluating and updating the preliminary design of previously proposed improvements to a 1.7-mile segment (Contract E) of the NH Route 125 corridor located in Plaistow and Kingston. The 1.7-mile segment is the only remaining segment that has not yet been constructed from a 6-mile project corridor that was previously studied and approved.

Jennifer Zorn, (MJ) provided a brief summary of the project scope, which includes Wetland Delineation of the 1.7-mile segment, Stream Assessment at two crossings of the Little River, NEPA reevaluation, 15%

pre-preliminary design, 30% preliminary design and 60% Slope and Drain design (design is being done by prime consultant, GM2).

She explained that the focus of the NEPA reevaluation is to determine if any new resources are present in the 1.7-mile segment and if impacts to the resources will be altered from what was proposed and presented for the project in the 2005 NEPA Environmental Assessment and previously approved wetland permit.

Wetland impacts may or may not differ from the previously approved NHDES permit (#2004-00763) however, as of the pre-preliminary design phase (15%) she explained that wetland impacts were on track to be less than what was previously approved. Wetland mitigation for this 1.7 segment was previously carried out during the approval process for the entire 6-mile project corridor and the 1.7-mile segment anticipated 1.95 acres of associated permanent wetland impact *(*temporary impacts not calculated to date as the project is in the pre-preliminary design phase)*. It was previously agreed that if impacts were greater than 1.95 acres, then the additional impact would be compensated for by NHDOT in the form of an ARM Fund Payment.

It is possible that work may be required to the existing 48" RCP culvert at Little River which was not previously anticipated or discussed. The agencies agreed that stream mitigation was not part of the mitigation package that was previously approved and this matter would need to be revisited when the design was further advanced and the specific stream impacts were more defined.

Tobey Reynolds inquired whether a mitigation credit could be issued if wetlands impacts were less than 1.95 acres. The consensus of the agencies was that more detailed decisions and information was necessary to determine a response to this matter.

Tobey Reynolds stated that a permit application was anticipated to be submitted in 2022. It was the general consensus that the focus of the next NRACM would address the Stream Rules and mitigation relative to the two proposed stream crossings.

This project has been previously discussed at the 10/18/2000, 1/16/2002, 8/21/2002, 7/16/2003, 8/7/2003, 9/17/2003, and 4/12/2005 Monthly Natural Resource Agency Coordination Meeting.

Lebanon-Hartford, #16148 (A001(154))

This project involves the rehabilitation and widening of the Interstate 89 bridges over the Connecticut River between Lebanon, NH and Hartford, VT. The project was last reviewed at this meeting in August 2018. The purpose of today's meeting is to review proposed design changes related to scour protection and the Vermont bank cut. The NHDES permit application was submitted in November 2018. NHDES requested more information to address mitigation and questions from the Connecticut River Joint Commissions. A response to NHDES has not yet been provided because of recent design-related discussions resulting in design changes that need to be finalized before responding to application questions.

Brian Colburn provided an overview of the project. The two existing bridges will be widened to the middle to provide a single 110'+/- wide bridge deck. The in-fill will require new footings between each of the five pairs of existing piers, four of which are located in the river. This in-fill results in a slight rise in base flood elevation within the regulatory floodway of the river. Additionally, two pairs of piers are classified as scour critical. McFarland Johnson recently completed further analysis to confirm that protection of these piers was warranted. The need for scour protection was confirmed and the footprint of the proposed scour protection was extended 5 feet downstream beyond the originally proposed footprint. The preferred scour protection continues to be A-Jacks concrete armor units. This method results in a more limited

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: August 19, 2020
LOCATION OF CONFERENCE: John O. Morton Building
ATTENDED BY:

NHDOT
Sarah Large
Matt Urban
Ron Crickard
Mark Hemmerlein
Jon Evans
Meli Dube
John Sargent
Jason Tremblay
Marc Laurin
Maggie Baldwin
Kathy Corliss

ACOE
Mike Hicks

EPA
Beth Alafat
Jeanie Brochi

Federal Highway Administration
Jaimie Sikora

NHDES
Lori Sommer
Karl Benedict

NHB
Amy Lamb

NH Fish & Game
Carol Henderson

Consultants/ Public Participants
Raymond Hanf
David Smith
Lee Carbonneau
Stephen Hoffmann
Christine Perron
Samuel White
Jennifer Zorn
Seth Hill
Jennifer Riordan

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

(When viewing these minutes online, click on a project to zoom to the minutes for that project.)

Carol Henderson was also in agreement that the scour hole should be left alone to fill naturally. She also provided clarification on the time of year restriction. The restriction is associated with anadromous fish, not the American eel or Blanding's turtle identified on the NHB Report. Ms. Henderson also stated that wildlife friendly erosion control matting should be used during construction.

Amy Lamb mentioned that American featherfoil and tufted loosestrife were identified on the NHB Report. The tufted loosestrife typically flowers in June and she was hoping for the plant survey to be completed during that time. Ms. Perron acknowledged that the plant survey had been delayed but noted that it was scheduled to be completed the following week.

Beth Alafat concurred with Karl and Lori's comments. She also asked if suitable Blanding's turtle habitat is present in the project area and suggested showing invasive species on the plans and developing a management plan if invasive species are present.

Pete Steckler was unable to attend the meeting but Sarah Large provided a summary of the comments he provided via email prior to the meeting. The project is located within an important wildlife corridor and part of the Connect the Coast Initiative. Wildlife passage is a priority, especially under-road passage in the dry. Mr. Steckler mentioned the possibility of coordinating with the project team to use camera traps to document wildlife passage at this location before and after construction.

This project was previously discussed at the 10/19/2019 Monthly Natural Resource Agency Coordination Meeting.

Plaistow-Kingston, #10044E (X-A000(378))

Jennifer Zorn (MJ) provided a brief overview of the project history. The overall Plaistow-Kingston, 10044 project was 6 miles in length and previously designed, and has been vetted through the NEPA process and Public Hearing process in 2004/2005. Most of the overall project has been constructed, with the exception of Contract E, the project at-hand. Contract E consists of the widening of NH 125 from just north of the Old County Road intersection in Plaistow to just south of Newton Junction Road/Hunt Road intersection in Kingston and is approximately 1.8 miles in length. A redesign of this last section has been undertaken due to the decrease in actual traffic volumes versus the projected traffic volumes. This current design calls for a reduction in the project's footprint from the previously proposed five-lane roadway. The current design call for a three-lane roadway where the center lane is a dedicated two-way left turning lane.

She explained that the focus of the NEPA Reevaluation is to determine if new resources are present in the 1.8 mile segment and if impacts to the resources will be altered from what was proposed/presented for the project in the 2005 NEPA Environmental Assessment. The 2004/2005 project within the 1.8-mile segment anticipated 1.95 acres of wetland impact. It was previously agreed that if impacts due to the redesign were greater than 1.95 acres, the additional impacts would be compensated for by NHDOT in the form of an ARM Fund Payment. Based upon preliminary design, the anticipated wetland impacts for redesign of Contract E are 0.5 acres; therefore, this impact was previously addressed in the mitigation package as part of the former NHDES wetland permit (#2004-00763).

The anticipated impacts to the stream crossings (Little River) were not included in the 2004 NHDES permit. Seth Hill (GM2) presented the alternative analysis of the treatments to the stream crossings (NH 125 and Diamond Oaks Road, a private road) and stated that the preferred option is to extend the existing culvert under NH 125 (and not replace it). Factors considered included: existing fishery habitat in the Little River; condition of the existing culverts ("good" condition with a long service life based upon a recent inspection); impacts to wetlands and stream bank; costs; and other factors.

Seth Hill provided details on the factors that were considered by the Department and GM2 in their evaluation of the alternatives, including:

1. NH 125 culvert extension only - no hydraulic concerns would occur with a 3 to 4 foot extension, the 100-year flood elevation would be below NH 125, temporary and permanent impacts are minor, with an estimated cost of $23,000;
2. hydraulically compliant crossings - would require installation of 16 foot by 5 foot rigid frame structures be installed at NH 125 and Diamond Oaks Road, increase the temporary and permanent impacts to Little River, with estimated costs of $1,337,000, and;
3. stream crossing rule compliant crossings – would require installation of 29 foot by 4 foot rigid box structures at NH 125 and Diamond Oaks Road, permanent impacts would be less than alternative 2 due to the width spanning the river, but the impacts would still be greater than alternative #1, and the most costly option estimated at $1,734,000.

Jennifer Zorn reviewed the anticipated project schedule that entails the completion of the NEPA Reevaluation, Slope and Drain, a second Public Informational Meeting, and a Public Hearing by the end of 2020. After this, Final Design, permits, and ROW would occur from 2021 to 2023. Construction is anticipated to begin in late 2023 or 2024.

The following questions and comments were made by participants in the meeting:

Karl Benedict (NHDES):

- Inquired if wetland impacts would occur within BMP areas. Seth Hill stated that no impacts to wetlands are anticipated. The areas shown during the presentation are the general locations of the BMPs, not the BMPs footprints.
- Inquired as to the type of BMPs proposed. Seth replied that location A would be a treatment swale, and the B, C, D & G locations would all be wet extended detention basins.
- Requested that impacts to the stream and banks (Little River) be expressed in linear feet. GM2 agreed.
- Asked that consideration be given to get the headwalls out of the ordinary high water of Little River. GM2 will evaluate.
- Requested that any temporary impacts needed for clean water bypass measures during construction be noted in the future. GM2 agreed.
- Inquired if vernal pools were identified during the wetland delineation effort. Jennifer Zorn stated that none were found by either MJ or GM2.
- Requested clarification to the impacts to stream bank versus stream bed to the Little River. GM2 agreed.

Lori Sommer (NHDES):

- Concurred with Karl that impacts to Little River be expressed in linear feet. GM2 agreed.
- Questions the overtopping of Diamond Oaks Road by the Little River. Tim Mallette spoke about the rare occurrence that Diamond Oaks Boulevard would overtop and how it is a very shallow overtopping in real world conditions. Also, the overtopping is wide and does not cause erosion. Seth stated that due to these facts, the Department has determined that the exiting culvert on Diamond Hill Road would be left as is.
- Requested a summary of the mitigation package associated with the 2004 NHDES wetland permit. Marc Laurin briefly described the mitigation sites and will send information on the approved mitigation package to Lori.

Carol Henderson (NHF&G):

- Requested a current NHNHB search. GM2 agreed.
- After the second PIM, she requested that the project team return to a future NRACM to continue the discussion. Maggie Baldwin agreed.

Amy Lamb (NHNHB):

- NHB data search is now expired. There is new record for a Blanding's Turtle in the project area in the Misery Hill area. Carol recommended the project team contact Kim Tuttle for recommendations. GM2 agreed.

Beth Alafat (USEPA):

- Requested that indirect impacts to wetlands be reviewed based upon the BMP locations. GM2 agreed (assumed to be done during the permit phase/Final Design of the project).
- Requested that infiltration practices be used where appropriate. GM2 will evaluate.

Regarding Stream Mitigation, Marc Laurin will send the approved mitigation package to Lori Sommer for review in order to help determine if some of the mitigation already completed for the project has benefits and mitigation purposes associated with streams that could be credited or considered as mitigation for the anticipated stream impacts to the Little River.

This project was previously discussed at the 10-18-2000, 01-16-2002, 08-21-2002, 07-16-2003, 08-07-2003, 09-17-2003, 04-12-2005, and 03-20-19 Monthly Natural Resource Agency Coordination Meeting.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: November 18, 2020
LOCATION OF CONFERENCE: Virtual meeting held via Zoom
ATTENDED BY:

NHDOT
Sarah Large
Matt Urban
Andrew O'Sullivan
Mark Hemmerlein
Rebecca Martin
Meli Dube
Wendy Johnson
Matt Lampron
Marc Laurin
Dan Prehemo
Jon Hebert
Maggie Baldwin
Kathy Corliss
Gerry Bedard
Jason Tremblay
John Sargent

ACOE
Lindsey Lefebvre

Federal Highway
Jaimie Sikora

NHDES
Lori Sommer
Karl Benedict
Ann Pelonzi

NH Fish & Game
Carol Henderson

NHB
Amy Lamb

The Nature Conservancy
Pete Steckler

Consultants/ Public Participants
Vicki Chase
Jim Hall
Robert Durfee
Jim Donison, City of Lebanon
Adam Stockin
Karie-An James
Jennifer Riordan
Tony Puntin
Jennifer Zorn
Seth Hill

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

(When viewing these minutes online, click on a project to zoom to the minutes for that project.)

conceptual alternatives would be the least impacting to wetlands. He agreed that re-delineation would be required and will discuss the project with the Wetlands Bureau Coastal Staff to get their input.

Lori Sommer asked if the field had any wetlands, Marc responded that the field was all upland. Lori commented that all of the three alternatives impact the open space of the field and that the concepts would only move the open space impacts further to the north. She inquired if North Road (east) could be retained closer to its current alignment. Jon explained that due to the grade at the intersection of US Route 1 with North Road, the need to provide appropriate sight distance at US Route 1 and access to Sagamore Golf Center, the proposed road relocation identified on the Hearing Plan was considered the most reasonable location. Also, the water quality treatment area for US 1 needs to be located in the field in the vicinity of the existing road location. While small adjustment can be made, there would still be significant impact to the corner of the parcel. Lori stated that the original hearing design makes sense and the three other alternative don't address the least impacting criteria. Regarding potential mitigation, she suggested talking to the Southeast Land Trust (SELT), the Nature Conservancy and the Town's Conservation Commission.

Jon stated that after further coordination with the Town, DOT will come back to present this coordination effort at a future Resource Agency meeting. Sarah asked if the feedback that is being received from the Resource Agencies will be presented to the Town, Jon confirmed it would be. Carol Henderson agreed that the original concept is the best. The three alternative concepts fragment wildlife connectivity to a much greater degree. Amy Lamb agreed with the original concept being the least environmentally impactful and asked to be kept in the loop with the drainage on North Road (west) and any potential impacts to the iris. She stated that when further design of the area is done, she will go out and identify the locations of the plants to see if they are impacted by the proposed design. Lindsey Lefebvre also agreed that the original concept is preferable.

Pete Steckler agreed that the original concept is preferable. He commented that open space is also includes "green space" and that fragmentation of habitat with the three conceptual alternatives is a concern. He remarked that Connect the Coast has identified a wildlife corridor in the area and that these green spaces have been recognized by the Land Conservation Priorities for the Protection of Coastal Water Resources (2016),a conservation plan funded by the NHDES Coastal Program and NOAA, as important pollution attenuation areas. He would be willing to provide this information to all. He also noted that it seems that the field impacts are similar to the original design for any of the conceptual alternatives, they are just in a different place. He noted that the SELT conservation land was adjacent to the project and that preservation of the remaining open space could be mitigation.

Karl concluded that a site meeting would be amenable if a conceptual alternative is pursued.

This project has been previously discussed at the 6/15/2016 Monthly Natural Resource Agency Coordination Meeting.

Plaistow-Kingston, #10044E (X-A000(378))

Jennifer Zorn (MJ) provided a brief overview of the project history. The overall Plaistow-Kingston, 10044 project was 6 miles in length and previously designed, and has been vetted through the NEPA process and Public Hearing process in 2004/2005. Most of the overall project has been constructed, with the exception of Contract E, the project at-hand. Contract E consists of the widening of NH 125 from just north of the Old County Road intersection in Plaistow to just south of Newton Junction Road/Hunt Road intersection in Kingston and is approximately 1.8 miles in length. A redesign of this last section has been undertaken due to the decrease in actual traffic volumes versus the projected traffic volumes. This current design calls for a

reduction in the project's footprint from the previously proposed five-lane roadway. The current design call for a three-lane roadway where the center lane is a dedicated two-way left turning lane.

The purpose of this meeting was to conclude two outstanding issues for the NEPA Reevaluation including mitigation for the proposed impact to the Little River, and guidance from NHNHB and NHF&G regarding T/E species or Species of Concern in or near the project area.

J. Zorn reviewed the total impact to wetlands which has been reduced from 1.95 acres (presented in the 2005 EA and permitted as per NHDES permit #2004-00763) to 0.5 acres, therefore the previous mitigation package that was executed as part of the NHDES permit satisfies the currently proposed wetland impacts. The proposed permanent impacts to the bank (7 LF) and channel (5 LF) of the Little River (due to the proposed culvert extension) were not addressed in the previous mitigation package since the current Stream Rules were not yet in effect. Based upon Lori Sommer's review of the previous mitigation package, she determined that the previous mitigation package adequately compensates for the lost functions that would have been required as mitigation for the Little River impacts. L. Sommer reviewed the mitigation package prior to this Natural Resource Agency meeting and provided follow up via email on 10/20/2020. L. Sommer indicated in her email that "A review of the information notes the presence of intermittent streams and one parcel includes frontage along the Pow-Wow River. These important stream resources have been conserved through the previous mitigation measures. I would agree that stream mitigation has been provided to adequately compensate for the lost functions that may occur through [this] project." It was concluded that no further mitigation would be necessary for the proposed stream impacts to the Little River.

The mitigation package for 10044B consisted of the following:

- creation of wetlands and preservation of the Sullivan site adjacent to Bayberry Pond in Kingston
- preservation of the Nichols site along the Pow-wow River in Kingston, and
- preservation of the Frog Pond Woods site along Kelly Brook in Plaistow.

Relative to species that may be present, J. Zorn reviewed the current NHNHB search results with the focus on a record for the presence of a Blanding's Turtle (State endangered) adjacent to the project area. J. Zorn stated that NHF&G provided very detailed guidance which will be incorporated into the NEPA Reevaluation, in the Environmental Commitments and will be applied during final design, permitting and construction.

The following questions and comments were made by participants in the meeting:

Karl Benedict (NHDES):

- Requested that a short summary of how the wetland impacts were reduced be provided in future submissions, such as permitting. J. Zorn stated that the reduction of impact was primarily due to the reduced footprint of the project (from a five-lane typical section to a three-lane typical section). A summary will be provided in the application.

Lori Sommer (NHDES):

- Inquired whether T/E species were associated with the Little River. J. Zorn stated she did not believe so but would need to verify. Amy Lamb confirmed that a Wood Turtle record was present within the Little River.

This project has been previously discussed the 10/18/2000, 1/16/2002, 8/21/2002, 7/16/2003, 8/7/2003, 9/17/2003, 4/12/2005, 3/20/19, and 8/19/20 Monthly Natural Resource Agency Coordination Meetings.

Mitigation

As discussed in the supplemental narrative/project background, wetland impacts were previously mitigated as part of the overall 10044B project under Wetlands Permit #2004-00763. This mitigation package included 80.8 acres of land preservation and restoration of two wetlands. The previous permit and mitigation package allowed for up to 1.95 acres of permanent wetland impact under Contract 10044E. With the reduced project footprint, wetland impacts were substantially reduced. The currently proposed 10044E project includes approximately 0.354 acres of permanent wetland and bank impact.

The previous mitigation package did not address stream impacts since it was developed prior to the NHDES rules that require separate mitigation for watercourse-related impacts. The 10044E project, as currently proposed, includes approximately 29 linear feet of permanent stream impact (5 linear feet of channel impact and 24 linear feet of bank impact to the Little River from culvert extension). The stream impacts and mitigation package were discussed with the NHDES Wetlands Bureau at NHDOT Natural Resource Agency Coordination Meetings and through email correspondence (enclosed). Lori Sommer of NHDES reviewed the previous mitigation package and determined that it adequately compensates for the lost functions that would have been required as mitigation for the Little River impacts. As such, it was determined that no further mitigation is necessary for the 10044E project.

Jennifer Riordan

From: Sommer, Lori <LORI.L.SOMMER@des.nh.gov>
Sent: Tuesday, October 20, 2020 3:27 PM
To: Laurin, Marc
Cc: Benedict, Karl
Subject: RE: Plaistow-Kingston, 10044E - Existing Mitigation Documentation

Thanks Marc,
I am glad to see all of the materials have been completed and deeds recorded. A review of the information notes the presence of intermittent streams and one parcel includes frontage along the Pow-Wow River. These important stream resources have been conserved through the previous mitigation measures. I would agree that stream mitigation has been provided to adequately compensate for the lost functions that may occur through the future project. No further mitigation is required from the NHDES requirements. I would make sure the Corps is in agreement. Thanks,

Lori

From: Laurin, Marc
Sent: Monday, October 19, 2020 11:36 AM
To: Sommer, Lori
Subject: RE: Plaistow-Kingston, 10044E - Existing Mitigation Documentation

Lori,

I uploaded the 8 files. I don't have the privilege to make a separate folder, so they are individually listed after the Ossipee 41251 folder.

Marc

From: Laurin, Marc
Sent: Monday, October 19, 2020 11:06 AM
To: Sommer, Lori <LORI.L.SOMMER@des.nh.gov>
Subject: RE: Plaistow-Kingston, 10044E - Existing Mitigation Documentation

Lori,

Sorry, I recall that the FTP site automatically deletes stuff after a few weeks. So I guess what I put in there in October has been deleted.

I will place information in there today and let you know when it is downloaded.

Marc

From: Sommer, Lori <LORI.L.SOMMER@des.nh.gov>
Sent: Monday, October 19, 2020 10:37 AM
To: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Subject: RE: Plaistow-Kingston, 10044E - Existing Mitigation Documentation

Hi Marc,

I tried to open the files at the FTP site and it only includes items for Wolfeboro and Osippee projects? Maybe I'm doing something wrong? Please advise,

Lori

From: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Sent: Monday, October 19, 2020 9:52 AM
To: Sommer, Lori <LORI.L.SOMMER@des.nh.gov>; Benedict, Karl <Karl.D.Benedict@des.nh.gov>
Cc: Jennifer Zorn <JZorn@mjinc.com>; Jennifer Riordan <JRiordan@GM2INC.COM>; Baldwin, Margarete <Margarete.A.Baldwin@dot.nh.gov>; Lampron, Matthew <Matthew.D.Lampron@dot.nh.gov>; Corliss, Kathleen <Kathleen.S.Corliss@dot.nh.gov>; Hemmerlein, Mark <mark.t.hemmerlein@dot.nh.gov>
Subject: RE: Plaistow-Kingston, 10044E - Existing Mitigation Documentation

Lori,

Did you get a chance to review the documentation? We will want to finalize the discussion on the stream crossing impacts at the **November** Resource Agency meeting and want to make sure we have provided what you need.

Let me know if you have any questions.

Marc

From: Laurin, Marc
Sent: Thursday, August 27, 2020 9:31 AM
To: Sommer, Lori <LORI.L.SOMMER@des.nh.gov>; Benedict, Karl <Karl.D.Benedict@des.nh.gov>
Cc: Jennifer Zorn <JZorn@mjinc.com>; Jennifer Riordan <JRiordan@GM2INC.COM>; Baldwin, Margarete <Margarete.Baldwin@dot.nh.gov>; Lampron, Matthew <Matthew.Lampron@dot.nh.gov>; Corliss, Kathleen <Kathleen.Corliss@dot.nh.gov>
Subject: Plaistow-Kingston, 10044E - Existing Mitigation Documentation

Lori,

As requested during the August 19th Natural Resource Agency meeting, I have compiled the documents describing the wetland mitigation sites associated with the Plaistow-Kingston NH 125 corridor widening.

I am providing you with a link to our FTP site as a few of the electronic files are large and I recall that DES's server is limited in the size you can receive.

FTP Site: https://nhftp.nh.gov/

Environment
Username: dot.environment
Password: NHenviro20

I have downloaded 8 files: Plaistow-Kingston Mitigation Sites Location Map; Pow-wow conservation easement Quitclaim Deed; Pow-wow conservation easement baseline study; Sullivan Mitigation Tech Report 2006; Kelly Brook (Frog Pond Woods) Recorded Quitclaim Deed; Kelly Brook CombinedBaselinFinalReport_02_02_12; Wetland Mitigation Technical Report – 2009, and; Addendum to FEA (Sections 4.3.4, 4.8.2.3, 6.

The mitigation package consists of the

- creation of wetlands and preservation of the Sullivan site adjacent to Bayberry Pond in Kingston
- preservation of the Nichols site along the Pow-wow River in Kingston, and
- preservation of the Frog Pond Woods site along Kelly Brook in Plaistow.

Let me know if you need more information.

Thanks,

Marc

Wetland Functions

Wetland ID	Impact Area(s)	1. Ecological Integrity	2. Educational Potential	3. Fish & Aquatic Life Habitat	4. Flood Storage	5. Groundwater Recharge	6. Noteworthiness	7. Nutrient Trapping/Retention	8. Production Export	9. Scenic Quality	10. Sediment Trapping	11. Shoreline Anchoring	12. Uniqueness/Heritage	13. Wetland-based Recreation	14. Wetland-dependent Wildlife Habitat
1	A				X			X			X				X
3	C				X	X		P	X		P				X
4	D1, D2				X	X		P	X		P				X
5	E, F, G, H, I				X	X		P	X		X				X
6	J				X			X	X		X				X
9 (Little River)	L	X		P		X			X						X
10	B, M, N, O, P			P	X	X		P	X		P	P			X
13	Q, S, U	P			X	X		P	P		P	X			P
14	T				X						X				X
15	V				X						X				X
16	W, X				X			X			X				X
17	Y				X			X			X				X
18	Z, AA				X			X			X				X
20	CC				X			X			X				X

P = Function is provided at a principal level

X = Function is provided at a lower level

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: NHDOT

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

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

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Commercial	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): ~50	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jennifer Riordan, (CWS #269)	
DATE(S) OF SITE VISIT(S): 8/8/2018, 8/16/2022	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if “other”): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 1	LOCATION: (LAT/ LONG) 42.857/-71.094
WETLAND AREA: >0.5 acres	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PEM1E, PSS/PFO1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE:	PROPOSED WETLAND IMPACT AREA:

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

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

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 1 is in close proximity to the road and has multiple invasive species
2	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 1 does not provide easy public access
3	☐ Yes ☒ No		☐ Yes ☐ No	Wetland is between highly developed areas and is not associated with a watercourse
4	☒ Yes ☐ No	3, 5, 6, 9, 18	☐ Yes ☒ No	Wetland 1 is within close proximity to the road and has dense vegetation
5	☐ Yes ☒ No	4	☐ Yes ☐ No	Wetland 1 is not associated with a watercourse and a has a burried culvert
6	☐ Yes ☒ No		☐ Yes ☐ No	The wetland does not contain any known threatened or endangered species or associated critical habitat
7	☒ Yes ☐ No	3, 5, 9	☐ Yes ☒ No	Wetland has dense vegetation, receives runoff from road
8	☐ Yes ☒ No	7, 12	☐ Yes ☒ No	The wetland contains dense vegetation of various invasive species
9	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 1 is in close proximity to a busy road
10	☒ Yes ☐ No	1, 2, 9	☐ Yes ☒ No	The wetland receives and retains roadway runoff
11	☐ Yes ☒ No		☐ Yes ☐ No	The wetland is not associated with a watercourse or shoreline
12	☐ Yes ☒ No	1	☐ Yes ☐ No	Wetland 1 is in a heavily developed area on the side of NH Route 125
13	☐ Yes ☒ No		☐ Yes ☐ No	The wetland does not offer any recreational opportunities
14	☒ Yes ☐ No	6, 7, 8, 13, 19	☐ Yes ☒ No	Wetland is connected to other, larger wetland systems

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

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

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

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

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

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

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

SECTION 6 - STREAM RESOURCES SUMMARY

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

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

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

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

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: NHDOT

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

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

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Commercial	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): <50 ft	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jennifer Riordan, (CWS #269)	
DATE(S) OF SITE VISIT(S): 8/8/2018, 8/16/2022	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 3 & 4	LOCATION: (LAT/ LONG) 42.859/-71.091
WETLAND AREA: unknown	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? unknown	COWARDIN CLASS: PFO1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? lower	IS THE WETLAND PART OF: ☒ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE:	PROPOSED WETLAND IMPACT AREA:

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

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

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☐ No	Within project area, wetlands have signs of disturbance. Beyond project limits, Wetland 4 is mapped as peatland
2	☐ Yes ☒ No	5	☐ Yes ☐ No	WAP Supporting Landscape mapped in both Wetland 3 & 4; access to wetlands is limited
3	☐ Yes ☒ No	1	☐ Yes ☐ No	Wetlands are connected to the Little River but not directly adjacent
4	☒ Yes ☐ No	4, 5, 6, 9	☐ Yes ☒ No	Wetlands 3 & 4 provide areas of floodwater retention for the nearby developed areas and Little River watershed
5	☒ Yes ☐ No	2, 7	☐ Yes ☒ No	Wetlands are connected to the Little River
6	☐ Yes ☒ No		☐ Yes ☐ No	Beyond the project study area, the wetlands provide T&E species habitat
7	☒ Yes ☐ No	3, 4, 5, 10	☒ Yes ☐ No	Both wetlands are bordered by upland and developed areas that provide runoff and are contiguous with other wetlands
8	☒ Yes ☐ No	1, 2	☐ Yes ☒ No	Both wetlands provide wildlife food sources
9	☐ Yes ☒ No		☐ Yes ☐ No	Both wetlands are in close proximity to a busy road (NH Route 125)
10	☒ Yes ☐ No	1, 2, 5, 6, 9	☒ Yes ☐ No	Both wetlands retain roadway runoff
11	☐ Yes ☒ No		☐ Yes ☐ No	Wetlands 3 & 4 are not adjacent to a stream or waterbody
12	☐ Yes ☒ No	1, 10	☐ Yes ☐ No	Within project area, wetlands have been disturbed by adjacent road; beyond study area, both wetlands are less disturbed
13	☐ Yes ☒ No		☐ Yes ☐ No	

14	☒ Yes ☐ No	6, 7, 8	☐ Yes ☒ No	The wetlands are surrounded by developed area and in close proximity to the road

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

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

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

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

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

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

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

SECTION 6 - STREAM RESOURCES SUMMARY

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

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

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

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

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: NHDOT

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

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

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: residential/commercial/road	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): <25 ft	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jennifer Riordan, (CWS #269)	
DATE(S) OF SITE VISIT(S): 8/18/2018, 8/16/2022	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 5 & 6	LOCATION: (LAT/ LONG) 42.860/-71.090
WETLAND AREA: Wetland 5 = 0.3 acres, Wetland 6 = unknown	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 0	COWARDIN CLASS: PFO1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE:	PROPOSED WETLAND IMPACT AREA:

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

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

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 5 & 6 are surrounded and bordered by paved roadways and developed areas
2	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 5 is surrounded by paved roadways and neither wetlands offer easy access
3	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 5 & 6 do not provide fish or shellfish habitat
4	☒ Yes ☐ No	3, 4, 5, 6 (Wetland 6), 9, 15	☐ Yes ☒ No	Wetlands 5 & 6 provide floodwater retention due to their proximimity to the road and surrounding impervious surfaces; small size of wetlands limits amount of flood storage provided
5	☒ Yes ☐ No	2, 15 (Wetland 5)	☐ Yes ☒ No	Wetland 5 is relatively small but may provide some groundwater recharge
6	☐ Yes ☒ No		☐ Yes ☐ No	No T&E species records in these wetlands; development/habitat fragmentation limits wildlife value
7	☒ Yes ☐ No	3, 4, 5, 7, 10	☒ Yes ☐ No	Both wetlands provide areas of nutrient retention due to their proximity to the road. Wetland 5 is also in a depression that can be a trap for nutrients
8	☒ Yes ☐ No	1	☐ Yes ☒ No	Wildlife food sources present
9	☐ Yes ☒ No		☐ Yes ☐ No	Both wetlands are in close proximity to a busy road and developed areas
10	☒ Yes ☐ No	1, 2, 3, 9	☐ Yes ☒ No	Wetland 5 is a depressional wetland that could retain sediment and toxicants. Culvert from Wetland 6 to 5 allows for potential movement and trapping
11	☐ Yes ☒ No		☐ Yes ☐ No	Wetlands 5 & 6 are not associated with a streambank or shoreline
12	☐ Yes ☒ No	1	☐ Yes ☐ No	Wetlands 5 & 6 are in developed areas that do not provide any special values

13	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands do not provide any recreational opportunities
14	☒ Yes ☐ No	7 (Wetland 6), 8	☐ Yes ☒ No	Wetland 5 is fragmented by roads; Wetland 6 provides wildife habitat, but mostly beyond project area

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

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

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

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

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

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

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

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM:	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED?	DOES THE STREAM SYSTEM APPEAR STABLE?

☐ Yes ☐ No	☐ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE:

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

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

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

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

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: NHDOT

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

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

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Commercial	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): ~20 FT	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jennifer Riordan, (CWS #269)	
DATE(S) OF SITE VISIT(S): 8/18/2018, 8/16/2022	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 9 (Little River), 10	LOCATION: (LAT/ LONG) 42.863/-71.091
WETLAND AREA: ~0.6 acres	DOMINANT WETLAND SYSTEMS PRESENT: riverine, palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? unknown	COWARDIN CLASS: R2UBH, PEM1C, PFO1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE:	PROPOSED WETLAND IMPACT AREA:

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

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

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No		☐ Yes ☒ No	Little River provides ecological value, but is fragmented and disturbed by adjacent development within project area
2	☐ Yes ☒ No	3	☐ Yes ☐ No	The Little River and surrounding wetlands are not easily accessible
3	☒ Yes ☐ No	4 (River), 8, 14, 15, 16, 17	☒ Yes ☐ No	Redfin Pickerel (Species of Special Concern) shown in Little River survey
4	☒ Yes ☐ No	4, 5, 6, 8, 10, 11, 13	☐ Yes ☒ No	Adjacent wetland provides flood storage; amount is limited due to size of wetland
5	☒ Yes ☐ No	1, 4, 7, 15	☐ Yes ☒ No	Little River and adjacent wetland can provide areas for groundwater recharge
6	☐ Yes ☒ No		☐ Yes ☐ No	No NHB records within Wetlands 9 & 10
7	☒ Yes ☐ No	2 (River), 3, 4, 5, 7, 12	☒ Yes ☐ No	Little River and Wetland 10 provide opportunities for nutrient retention due to their proximity to the road and developed areas
8	☒ Yes ☐ No	1, 6 (River)	☐ Yes ☒ No	Little River and Wetland 10 provide limited production export
9	☐ Yes ☒ No	2	☐ Yes ☐ No	These wetlands are at a busy NH Route 125 crossing
10	☒ Yes ☐ No	1, 2, 3, 4, 6, 9, 10, 14	☒ Yes ☐ No	Wetland retains roadway runoff
11	☒ Yes ☐ No	3, 5, 9	☒ Yes ☐ No	Wetland 10 provides stabilization for Little River channel
12	☐ Yes ☒ No	1, 4, 22	☐ Yes ☐ No	The area is heavily developed and in a busy and mostly inaccessible area
13	☐ Yes ☒ No	6	☐ Yes ☐ No	This area of the Little River is not large enough to accomodate recreational opportunities

14	☒ Yes ☐ No	2, 6, 13, 20	☐ Yes ☒ No	Wildlife habitat is limited due to fragmentation from roadways

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

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

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

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

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

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

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1	N/A	No vernal pools in study area			
2					
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM: Lower perennial, low flow	STREAM TYPE (ROSGEN): C4
HAVE FISHERIES BEEN DOCUMENTED? ☒ Yes ☐ No	DOES THE STREAM SYSTEM APPEAR STABLE? ☒ Yes ☐ No
OTHER KEY ON-SITE FUNCTIONS OF NOTE:	

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No	Stream functions assessed under Section 4	☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

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

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

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

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Wetland 13

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: NHDOT

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

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

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Residential/commercial	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 10'-300'	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jennifer Riordan, (CWS #269)	
DATE(S) OF SITE VISIT(S): 8/18/18, 10/9/19, 10/11/22	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 13	LOCATION: (LAT/ LONG) 42.865/-71.088
WETLAND AREA: unknown	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? 1	COWARDIN CLASS: PFO1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE:	PROPOSED WETLAND IMPACT AREA:

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

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

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No		☒ Yes ☐ No	Wetland 13 is a large wetland in a developed area and it contains a tributary to the Little River (beyond project area)
2	☐ Yes ☒ No	5	☐ Yes ☐ No	Wetland 13 is mostly only accessible through private property
3	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 13 does not provide fish or shellfish habitat within the project area - function is provided in other parts of the wetland near the Little River
4	☒ Yes ☐ No	5, 6, 9, 10	☐ Yes ☒ No	Wetland 13 provides flood storage, but function is limited for the portions of the wetland within the project area
5	☒ Yes ☐ No	1, 2, 7, 10	☐ Yes ☒ No	The overall wetland provides GW recharge, but this function appears limited at the edges of the wetland within the project area
6	☐ Yes ☒ No		☐ Yes ☐ No	No NHB records within wetland
7	☒ Yes ☐ No	3, 5, 7, 9, 10, 11	☒ Yes ☐ No	Wetland 13 is a large wetland in a developed area that provides the potential for nutrient trapping
8	☒ Yes ☐ No	1, 2, 4, 10, 12	☒ Yes ☐ No	Wetland provides wildlife food sources
9	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 13 is surrounded by development and not easily accessed/viewed
10	☒ Yes ☐ No	1, 4, 6, 9, 10	☒ Yes ☐ No	Wetland retains runoff from surrounding areas; interior portion of wetland provides this function at a higher level
11	☒ Yes ☐ No	3, 4, 7, 12, 13	☐ Yes ☒ No	Function is provided at a higher level beyond project area (along Little River)
12	☐ Yes ☒ No	4, 10, 22	☐ Yes ☐ No	Wetland 13 is surrounded by development and not easily accessible
13	☐ Yes ☒ No		☐ Yes ☐ No	Wetland 13 does not provide recreational activites

14	☒ Yes ☐ No	2, 6, 7, 8, 12, 13	☒ Yes ☐ No	Function is provided at a higher level beyond the project area

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

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

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

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

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

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

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

SECTION 6 - STREAM RESOURCES SUMMARY

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

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

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

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

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: NHDOT

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

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

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: residential/roadway/undeveloped	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 10'-25'	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jennifer Riordan, (CWS #269)	
DATE(S) OF SITE VISIT(S): 8/18/2018, 8/16/2022	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if “other”): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 14, 15	LOCATION: (LAT/ LONG) 42.871/-71.086
WETLAND AREA: <0.5 ac.	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? none	COWARDIN CLASS: PFO1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☐ Yes ☒ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE:	PROPOSED WETLAND IMPACT AREA:

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

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

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☐ No	These wetlands are small with limited functions and in developed areas
2	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are not easily accessible & do not provide undisturbed viewing opportunities
3	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are not associated with a watercourse
4	☒ Yes ☐ No	3, 4, 9	☐ Yes ☒ No	Wetlands are small and have limited flood storage potential
5	☐ Yes ☒ No	1, 2	☐ Yes ☐ No	Groundwater recharge/discharge is not provided by these wetlands
6	☐ Yes ☒ No		☐ Yes ☐ No	No T/E species or critical habitats are documented
7	☐ Yes ☒ No	3, 4	☐ Yes ☐ No	The wetlands retain runoff but are small and have limited vegetation
8	☐ Yes ☒ No	1	☐ Yes ☐ No	Some wildlife food sources present - overall production export is limited
9	☐ Yes ☒ No		☐ Yes ☐ No	Wetlands are small, located adjacent to roadway
10	☒ Yes ☐ No	1, 2, 6	☐ Yes ☒ No	The wetlands retain runoff from roadway
11	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are not associated with a watercourse or waterbody
12	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are small & fragmented, have signs of disturbance
13	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands do not provide recreation opportunities
14	☒ Yes ☐ No	7, 8	☐ Yes ☒ No	The wetlands provide some wildlife food sources and habitat but amount is limited

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

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

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

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

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

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

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

SECTION 6 - STREAM RESOURCES SUMMARY

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

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

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

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

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

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

APPLICANT LAST NAME, FIRST NAME, M.I.: NHDOT

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

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

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Commercial	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): ~20 ft.	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Jennifer Riordan (CWS #269)	
DATE(S) OF SITE VISIT(S): 8/18/2018, 8/16/2022	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if “other”): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: 16, 17, 18, 20	LOCATION: (LAT/ LONG) 42.877/71.084
WETLAND AREA: unknown	DOMINANT WETLAND SYSTEMS PRESENT: palustrine
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? none	COWARDIN CLASS: PFO1E/PSS1E
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☐ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☐ Yes ☒ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☒ Yes ☐ No
PROPOSED WETLAND IMPACT TYPE:	PROPOSED WETLAND IMPACT AREA:

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

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

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☒ No		☐ Yes ☐ No	Although connected to larger wetland systems, the portions of the wetlands in the project area are located along the roadway and are not ecologically significant
2	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are not easily accessible & do not provide much educational value
3	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are not associated with a watercourse
4	☒ Yes ☐ No	5, 6, 9	☐ Yes ☒ No	The wetlands retain runoff from roadway and surrounding development
5	☐ Yes ☒ No	1, 2	☐ Yes ☐ No	
6	☐ Yes ☒ No		☐ Yes ☐ No	No NHB records within Wetlands 16, 17, 18, and 20
7	☒ Yes ☐ No	3, 4, 8	☐ Yes ☒ No	The wetlands retain runoff, have dense vegetation
8	☐ Yes ☒ No	1	☐ Yes ☐ No	
9	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are not easily viewed or accessible
10	☒ Yes ☐ No	1, 2, 6, 9	☐ Yes ☒ No	The wetlands retain runoff from nearby impervious areas
11	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands are not associated with a watercourse or waterbody
12	☐ Yes ☒ No		☐ Yes ☐ No	Surrounding area is developed; the wetlands are not considered particularly unique
13	☐ Yes ☒ No		☐ Yes ☐ No	The wetlands do not provide recreational opportunities

14	☒ Yes ☐ No	7, 8, 13	☐ Yes ☒ No	The wetlands provide wildlife food sources and small areas of habitat

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

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

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

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

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

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

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

SECTION 6 - STREAM RESOURCES SUMMARY

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

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

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

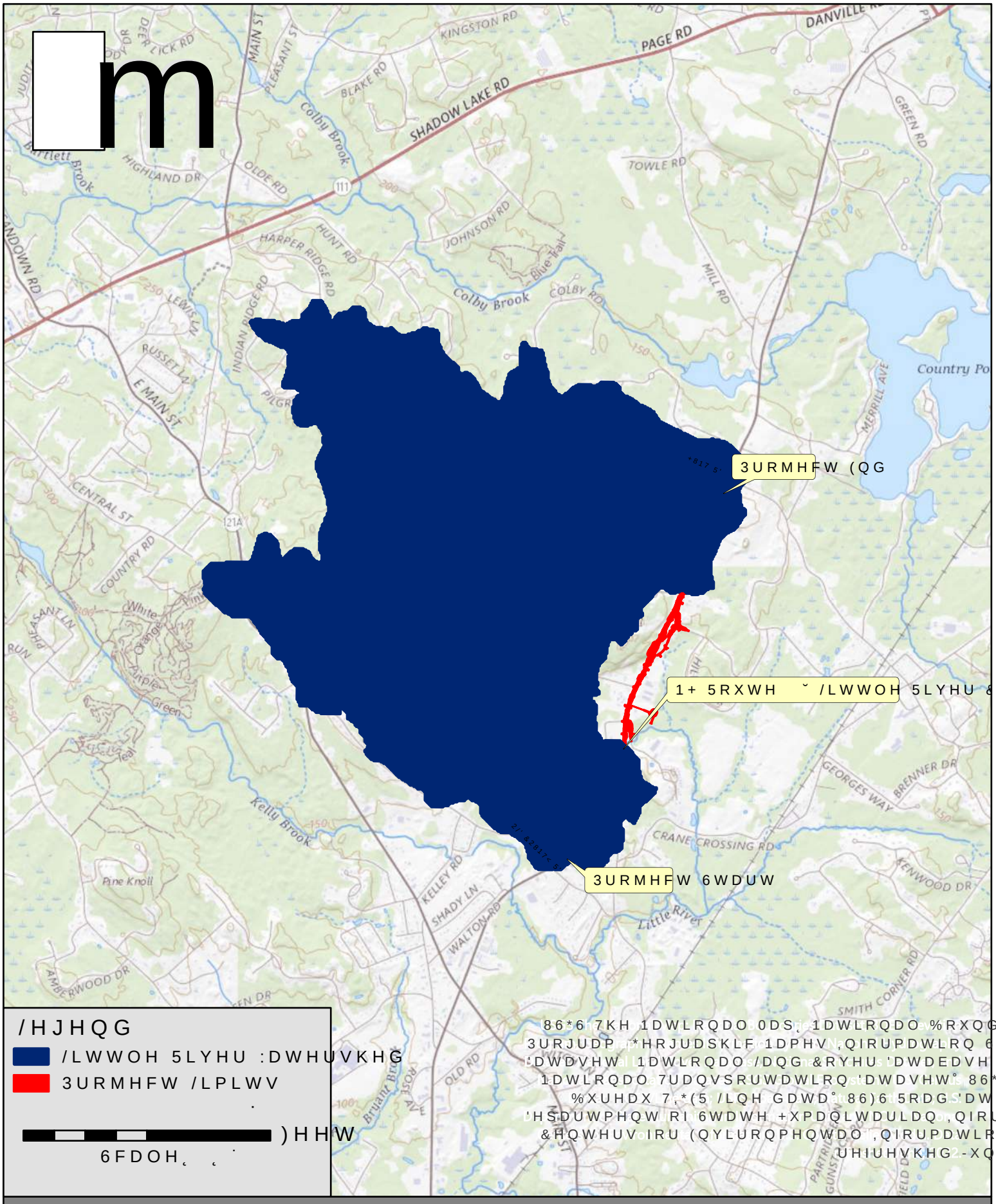
SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

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

☐ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.


3URMHFW (QG
1+ 5RXWH ˇ /LWWOH 5LYHU &
3URMHFW 6WDUW
/HJHQG
/LWWOH 5LYHU :DWHUVKHG
3URMHFW /LPLWV
)HHW
6FDOH
86*6 7KH 1DWLRQDO 0DS ¸ 1DWLRQDO %RXQGDU
3URJUDP *HRJUDSKLF 1DPHV ,QIRUPDWLRQ 6\VW
'DWDVHW 1DWLRQDO /DQG &RYHU 'DWDEDVH 1D
1DWLRQDO 7UDQVSRUWDWLRQ 'DWDVHW˚ 86*6
%XUHDX 7.*(5 /LQH GDWD˚ 86)6 5RDG 'DWD˚
'HSDUWPHQW RI 6WDWH +XPDQLWDULDQ ,QIRUPD
&HQWHUV IRU (QYLURQPHQWDO ,QIRUPDWLRQ
UHIUHVKHG -XQH
:DWHUVKHG 0DS
3ODLVWRZ .LQJVWRQ

Stream Crossing Rules (Env-Wt 900)
TECHNICAL REPORT

The project involves a 3-foot extension of a 48-inch culvert at a Tier 3 stream crossing. Individually, this extension would qualify for the Routine Roadway Maintenance Activities registration process, but since the project proposes other wetland impacts it exceeds the minimum impact threshold. This report addresses the applicable stream crossing rules under Env-Wt 904.09.

Env-Wt 904.09 - Repair, Rehabilitation, or Replacement of Tier 3 and Tier 4 Existing Legal Crossings

Env-Wt 904.09(a) - The repair, rehabilitation, or replacement of tier 3 stream crossings shall be limited to existing legal crossings where the tier classification is based only on the size of the contributing watershed.

The NH Route 125 crossing of the Little River is an existing legal crossing. The contributing watershed is 2,176 acres, making it a Tier 3 crossing. The crossing is not within a designated river corridor, 100-year floodplain, or prime wetland and does not have protected species or habitat.

Env-Wt 904.09(b) - Rehabilitation of a culvert or other closed-bottom stream crossing structure pursuant to this section may be accomplished by concrete repair, slip lining, cured-in place lining, or concrete invert lining, or any combination thereof, except that slip lining shall not occur more than once.

N/A – Slip lining or repair of the existing culvert is not proposed.

A project shall qualify under this section only if a professional engineer certifies, and provides supporting analyses to show, that:

Env-Wt 904.09(c)(1) – The existing crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species.

The NH Route 125 crossing does not have a history of flooding or overtopping. The large wetland upstream (west) of the crossing likely provides enough flood storage to accommodate large storm events without backing up at NH Route 125. The downstream crossing at Diamond Oaks Boulevard overtops under rare occurrences. When it overtops, the water is wide and shallow and does not cause erosion or impacts to adjacent properties.

No protected species occur in the area of the stream crossing.

Env-Wt 904.09(c)(2)(a) – The proposed stream crossing will meet the general criteria specified in Env-Wt 904.01

Env-Wt 904.01 General Design Considerations

(a) All stream crossings, whether over tidal or non-tidal waters, shall be designed and constructed so as to:

1. Not be a barrier to sediment transport;

Extending the culvert outlet is not anticipated to impact sediment transport since it will not substantially change the existing conditions at the crossing. The extension will match the elevation of the existing culvert so it doesn't create a barrier or impact flows in a way that would disrupt sediment transport. The culvert slope will remain the same (1.01%).

2. ***Not restrict high flows and maintain existing low flows;***

   The proposed extension will not change the opening of the existing crossing. HydroCAD analysis showed that the extended culvert will accommodate the 50-year storm event, with no substantial changes compared to existing conditions. Extending the culvert outlet will not influence low flow conditions in the Little River.

3. ***Not obstruct or otherwise substantially disrupt the movement of aquatic organisms indigenous to the waterbody beyond the actual duration of construction;***

   According to the NH Aquatic Restoration Mapper, the culvert at the NH Route 125/Little River crossing is listed as having reduced aquatic organism passage. Although no improvements are proposed, extending the culvert by 3 feet will not result in any further obstruction or disruption to aquatic organism passage compared to existing conditions.

4. ***Not cause an increase in the frequency of flooding or overtopping of banks;***

   The hydraulic analysis completed for the project indicated that the extended culvert will accommodate the 50-year 24-hour storm. No increase in flooding is anticipated as a result of extending the existing culvert.

   The NH Route 125 crossing does not have a history of flooding or overtopping. The large wetland upstream (west) of the crossing likely provides enough flood storage to accommodate large storm events without backing up at NH Route 125. The downstream crossing at Diamond Oaks Boulevard overtops under rare occurrences. When it overtops, the water is wide and shallow and does not cause erosion or impacts to adjacent properties.

5. ***Maintain or enhance geomorphic compatibility by:***
   i. ***Minimizing the potential for inlet obstruction by sediment, wood, or debris; and***
   ii. ***Preserving the natural alignment of the stream channel;***

   No changes to the culvert inlet are proposed, so the potential for inlet obstruction will remain unchanged compared to the existing condition.

   The alignment of the stream channel will also remain unchanged. The proposed extension is short enough that it will not impact existing channel morphology.

6. ***Preserve watercourse connectivity where it currently exists;***

   The existing watercourse connectivity within the project area will not be altered.

7. ***Restore watercourse connectivity where:***
    i. ***Connectivity previously was disrupted as a result of human activity(ies); and***
    ii. ***Restoration of connectivity will benefit aquatic organisms upstream or downstream of the crossing, or both;***

    N/A

8. ***Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and***

    The culvert extension is not anticipated to substantially increase water velocity at the crossing. Near NH Route 125, the Little River generally has very low water velocity, with a relatively wide channel. Upstream and downstream of the project area, water from the channel overflows into adjacent wetlands. No evidence of erosion or scouring was noted at the NH Route 125 crossing during site visits.

9. ***Not cause water quality degradation.***

    No water quality impacts are anticipated beyond potential temporary impacts during construction. Erosion and sediment controls will be used to minimize these impacts. Final dewatering/stream diversion plans will be developed prior to construction.

Env-Wt 904.09(c)(2)(b) – The proposed stream crossing will maintain or enhance the hydraulic capacity of the stream crossing

A hydraulic analysis was completed using HydroCAD and the resulting report is attached. The analysis shows that the extended culvert will accommodate the 50-year storm event with no substantial changes compared to existing conditions.

Env-Wt 904.09(c)(2)(c) – The proposed stream crossing will maintain or enhance the capacity of the crossing to accommodate aquatic organism passage

According to the NH Aquatic Restoration Mapper, the culvert at the NH Route 125/Little River crossing is listed as having reduced aquatic organism passage. Although no improvements are proposed, extending the culvert by 3 feet will not result in any further obstruction or disruption to aquatic organism passage compared to existing conditions. The stream channel at the crossing is flat and the extended culvert outlet will match the elevation of the existing channel.

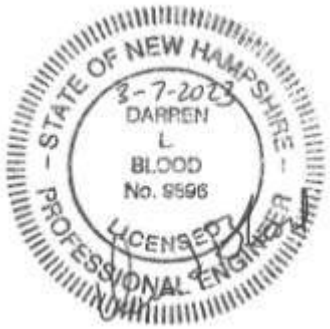
Env-Wt 904.09(c)(2)(d) – The proposed stream crossing will maintain or enhance the connectivity of the stream reaches upstream or downstream of the crossing

The existing watercourse connectivity upstream or downstream of the crossing will not be altered.

Env-Wt 904.09(c)(2)(e) – The proposed stream crossing will not cause or contribute to the increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing

The NH Route 125 crossing does not have a history of flooding or overtopping. The large wetland upstream (west) of the crossing likely provides enough flood storage to accommodate large storm events without backing up at NH Route 125. The downstream crossing at Diamond Oaks Boulevard overtops under rare occurrences. When it overtops, the water is wide and shallow and does not cause erosion or impacts to adjacent properties. Extending the culvert will not cause or contribute to the increase in the frequency of flooding or overtopping.

As required by Env-Wt 904.09(c), this report has been certified by a Professional Engineer.



Certified By:
Darren Blood, PE

WETLANDS PERMIT APPLICATION
STREAM CROSSING WORKSHEET
Water Division/Land Resources Management
Wetlands Bureau

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

This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

SECTION 1 - TIER CLASSIFICATIONS

Determine the contributing watershed size at USGS StreamStats.

Note: Plans for tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.

Size of contributing watershed at the crossing location: 2,176 acres

☐ **Tier 1**: A tier 1 stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres.

☐ **Tier 2**: A tier 2 stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres.

☒ **Tier 3**: A tier 3 stream crossing is a crossing that meets **any** of the following criteria:

- ☒ On a watercourse where the contributing watershed is more than 640 acres.
- ☐ Within a designated river corridor unless:
  a. The crossing would be a tier 1 stream based on contributing watershed size, or
  b. The structure does not create a direct surface water connection to the designated river as depicted on the national hydrography dataset as found on GRANIT.
- ☐ Within a 100-year floodplain (see Section 2 below).
- ☐ In a jurisdictional area having any protected species or habitat (NHB DataCheck).
- ☐ In a prime wetland or within a duly-established 100-foot buffer, unless a waiver has been granted pursuant to RSA 482-A:11, IV(b) and Env-Wt 706. Review the Wetlands Permit Planning Tool (WPPT) for town prime wetland and prime wetland buffer maps to determine if your project is within these areas.

☐ **Tier 4**: A tier 4 stream crossing is a crossing located on a tidal watercourse.

SECTION 2 - 100-YEAR FLOODPLAIN

Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:

☒ **No**: The proposed stream crossing *is not* within the FEMA 100-year floodplain.

☐ **Yes**: The proposed project *is* within the FEMA 100-year floodplain. Zone = _____

Elevation of the 100-year floodplain at the inlet: _____ feet (FEMA El. or Modeled El.)

SECTION 3 - CALCULATING PEAK DISCHARGE

Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): 349 CFS	Calculation method: USGS StreamStats
Estimated bankfull discharge at the crossing location: 135 CFS	Calculation method: NH hydaulic curves

→ ***Note: If tier 1, then skip to Section 10*** ←

SECTION 4 - PREDICTED CHANNEL GEOMETRY BASED ON REGIONAL HYDRAULIC CURVES *For **tier 2**, **tier 3** and **tier 4** crossings only.*	
Bankfull Width: 22.7 feet	Mean Bankfull Depth: 1.79 feet
Bankfull Cross Sectional Area: 40.38 square feet (SF)	

SECTION 5 - CROSS SECTIONAL CHANNEL GEOMETRY: MEASUREMENTS OF THE EXISTING STREAM WITHIN A REFERENCE REACH *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Describe the reference reach location: Upstream of crossing (ref. reach not accessible)
Reference reach watershed size: 2,176 acres

Parameter	**Cross Section 1** Describe bed form (*e.g. pool, riffle, glide*)	**Cross Section 2** Describe bed form (*e.g. pool, riffle, glide*)	**Cross Section 3** Describe bed form (*e.g. pool, riffle, glide*)	**Range**
Bankfull Width	25 feet	18 feet	13 feet	13-25 feet
Bankfull Cross Sectional Area	SF	SF	SF	SF
Mean Bankfull Depth	2.5 feet	2.5 feet	1.5 feet	1.5-2.5 feet
Width to Depth Ratio	10	7.2	8.7	7.2-10
Max Bankfull Depth	feet	feet	feet	feet
Flood Prone Width	110 feet	110 feet	110 feet	110 feet
Entrenchment Ratio	4.4	6.1	8.5	4.4-8.5

*Use **Figure 1** below to determine the measurements of the Reference Reach Attributes*

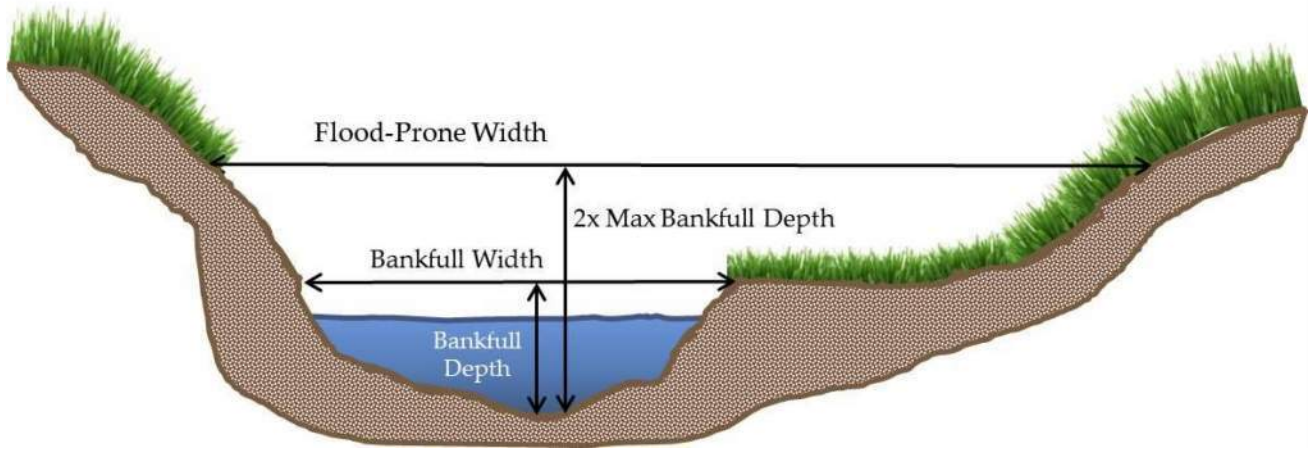


Figure 1: Determining the Reference Reach Attributes.

SECTION 6 - LONGITUDINAL PARAMETERS OF THE REFERENCE REACH AND CROSSING LOCATION *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Average Channel Slope of the Reference Reach:
Average Channel Slope at the Crossing Location: 0.001-0.02

SECTION 7 - PLAN VIEW GEOMETRY Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths. *For **tier 2**, **tier 3** and **tier 4** crossings only.*
Sinuosity of the Reference Reach:

Sinuosity of the Crossing Location: 1.11	
SECTION 8 - SUBSTRATE CLASSIFICATION BASED ON FIELD OBSERVATIONS *For **tier 2**, **tier 3** and **tier 4** crossings only.*	
% of reach that is bedrock:	%
% of reach that is boulder:	**2** %
% of reach that is cobble:	**27** %
% of reach that is gravel:	**44** %
% of reach that is sand:	**27** %
% of reach that is silt:	%
SECTION 9 - STREAM TYPE OF REFERENCE REACH *For **tier 2**, **tier 3** and **tier 4** crossings only.*	
Stream Type of Reference Reach:	C4

*Refer to Rosgen Classification Chart (**Figure 2**) below:*

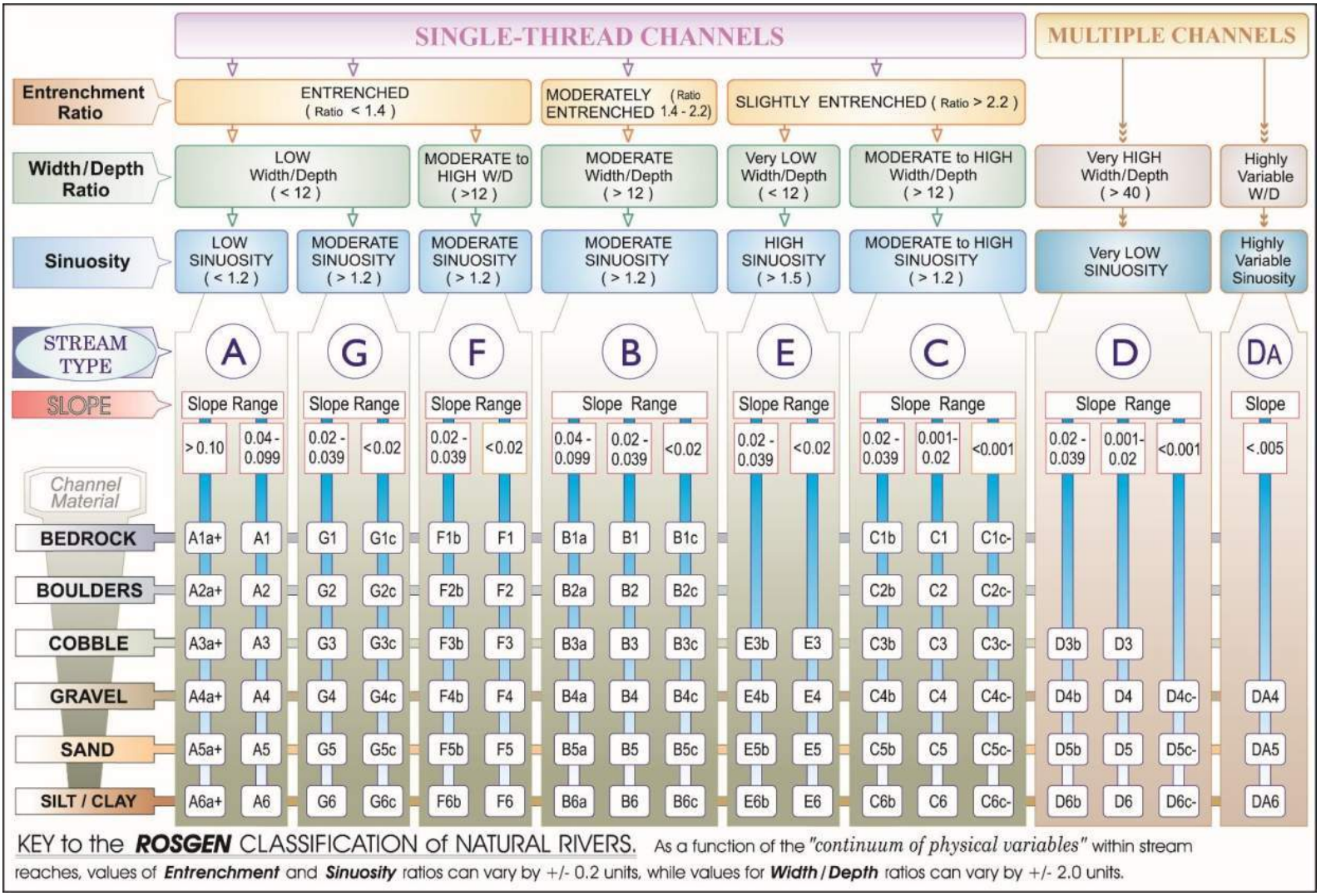


Figure 2: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 10 - CROSSING STRUCTURE METRICS

Existing Conditions

Existing Structure Type:
- ☐ Bridge span
- ☐ Pipe arch
- ☐ Open-bottom culvert
- ☒ Closed-bottom culvert
- ☐ Closed-bottom culvert with stream simulation
- ☐ Other:

Existing Crossing Span: *(perpendicular to flow)*	feet
Existing Crossing Length: *(parallel to flow)*	94 feet
Culvert Diameter:	4 feet
Inlet Elevation:	El. 105.18 feet
Outlet Elevation:	El. 104.23 feet
Culvert Slope:	1.01%

Proposed Conditions

Proposed Structure Type:	**Tier 1**	**Tier 2**	**Tier 3**	**Alternative Design**
Bridge Span	☐	☐	☐	☐
Pipe Arch	☐	☐		☐
Closed-bottom Culvert	☐	☐		☐
Open-bottom Culvert	☐	☐	☐	☐
Closed-bottom Culvert with stream simulation	☐	☐	☐	☐

Proposed Structure Span: *(perpendicular to flow)*	feet
Proposed Structure Length: *(parallel to flow)*	97 feet
Culvert Diameter:	4 feet
Inlet Elevation:	El. 105.18 feet
Outlet Elevation:	El. 104.20 feet
Culvert Slope:	1.01%

Proposed Entrenchment Ratio:* 0.3

*For **Tier 2**, **Tier 3** and **Tier 4** Crossings Only. To accommodate the entrenchment ratio, floodplain drainage structures may be utilized.*

** Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.10.*

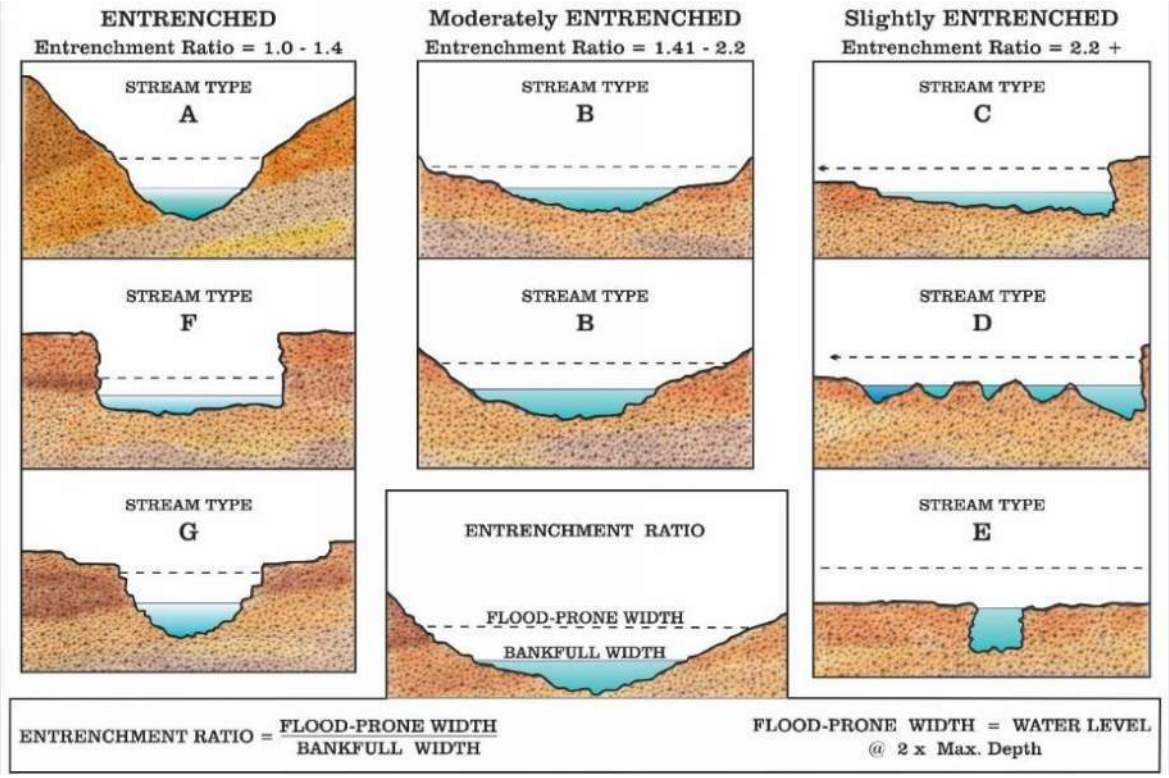


Figure 3: Reference from Applied River Morphology, Rosgen, 1996.

SECTION 11 - CROSSING STRUCTURE HYDRAULICS		
	Existing	**Proposed**
100 year flood stage elevation at inlet:	109.24 ft.	No change
Flow velocity at outlet in feet per second (FPS):	3.81 fps	No change
Calculated 100 year peak discharge (Q) for the *proposed* structure in CFS:		
Calculated 50 year peak discharge (Q) for the *proposed* structure in CFS:		154.51

SECTION 12 - CROSSING STRUCTURE OPENNESS RATIO

*For **tier 2**, **tier 3** and **tier 4** crossings only.*

Crossing Structure Openness Ratio* = 0.13

* Openness box culvert = (height x width)/length
Openness round culvert = (3.14 x radius^2)/length

SECTION 13 - GENERAL DESIGN CONSIDERATIONS

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

☒ Not be a barrier to sediment transport.

☒ Prevent the restriction of high flows and maintain existing low flows.

☒ Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.

☒ Not cause an increase in the frequency of flooding or overtopping of banks.

☒ Maintain or enhance geomorphic compatibility by:

a. Minimizing the potential for inlet obstruction by sediment, wood, or debris, and

b. Preserving the natural alignment of the stream channel.

☒ Preserve watercourse connectivity where it currently exists.

☐ Restore watercourse connectivity where:

a. Connectivity previously was disrupted as a result of human activity(ies), and

b. Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.

☒ Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.

☒ Not cause water quality degradation.

SECTION 14 - TIER-SPECIFIC DESIGN CRITERIA

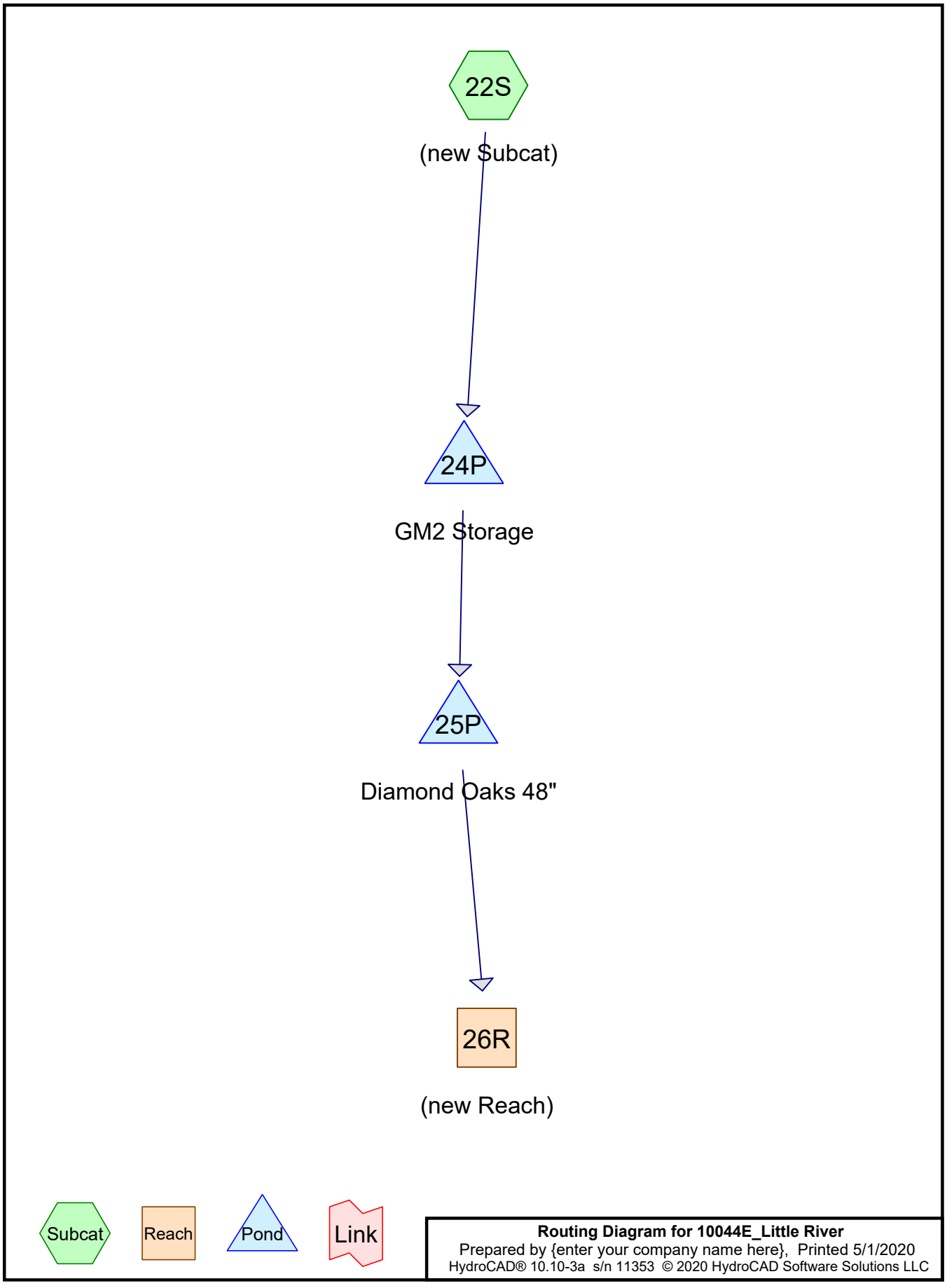
Stream crossings must be designed in accordance with the tier specific design criteria listed in Part Env-Wt 904.

☒ The proposed project meets the tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

SECTION 15 - ALTERNATIVE DESIGN

NOTE: If the proposed crossing does not meet all of the general design considerations, the tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.10.

☐ I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.10.


22S
(new Subcat)
24P
GM2 Storage
25P
Diamond Oaks 48"
26R
(new Reach)
Subcat
Reach
Pond
Link
Routing Diagram for 10044E_Little River
Prepared by {enter your company name here}, Printed 5/1/2020
HydroCAD® 10.10-3a s/n 11353 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 22S: (new Subcat)

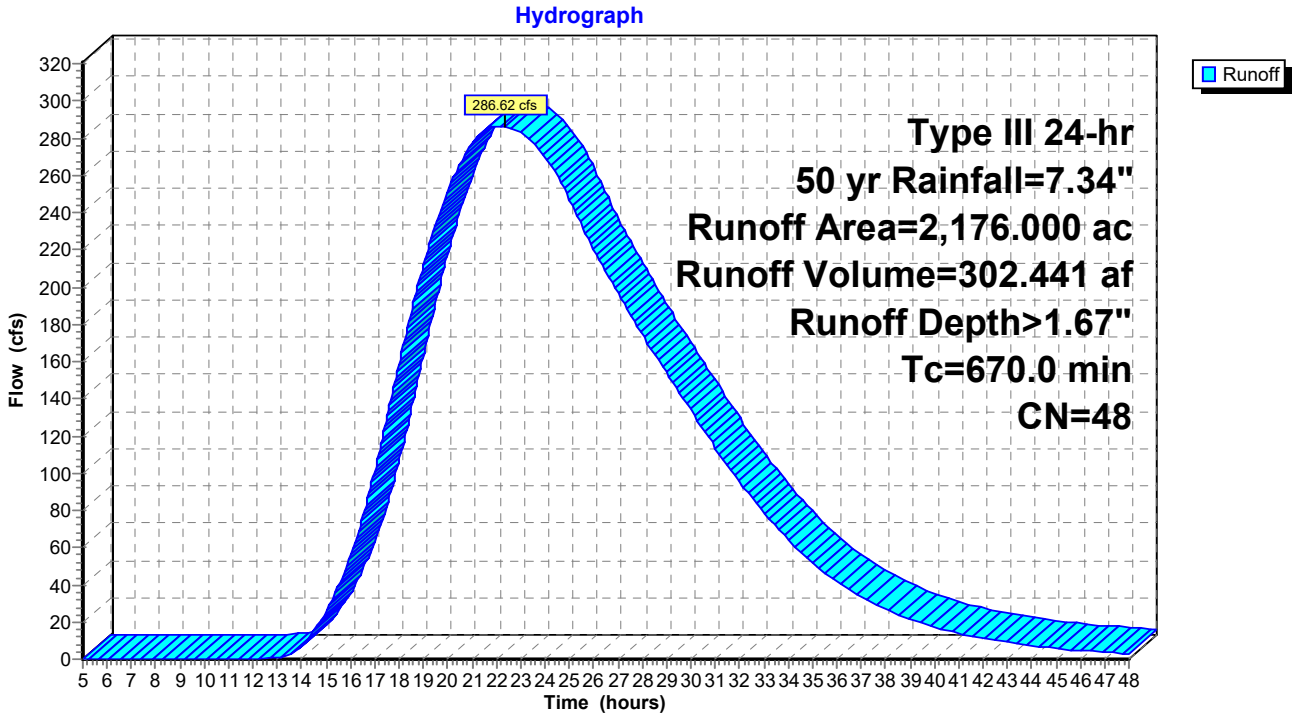
Runoff = 286.62 cfs @ 22.33 hrs, Volume= 302.441 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 yr Rainfall=7.34"

Area (ac)	CN	Description
2,176.000	48	Brush, Good, HSG B
2,176.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
670.0					**Direct Entry,**

Subcatchment 22S: (new Subcat)



Hydrograph for Subcatchment 22S: (new Subcat)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.42	0.00	0.00
5.50	0.47	0.00	0.00
6.00	0.53	0.00	0.00
6.50	0.59	0.00	0.00
7.00	0.66	0.00	0.00
7.50	0.75	0.00	0.00
8.00	0.84	0.00	0.00
8.50	0.94	0.00	0.00
9.00	1.07	0.00	0.00
9.50	1.22	0.00	0.00
10.00	1.39	0.00	0.00
10.50	1.59	0.00	0.00
11.00	1.84	0.00	0.00
11.50	2.19	0.00	0.00
12.00	3.67	0.18	0.06
12.50	5.15	0.65	0.38
13.00	5.50	0.79	1.01
13.50	5.75	0.89	2.52
14.00	5.95	0.98	7.05
14.50	6.12	1.06	15.18
15.00	6.27	1.13	25.63
15.50	6.40	1.19	39.09
16.00	6.50	1.24	56.44
16.50	6.59	1.28	76.64
17.00	6.68	1.33	101.25
17.50	6.75	1.36	129.67
18.00	6.81	1.39	158.87
18.50	6.87	1.42	186.83
19.00	6.92	1.45	211.68
19.50	6.98	1.48	234.03
20.00	7.02	1.50	252.45
20.50	7.07	1.53	265.64
21.00	7.12	1.55	276.36
21.50	7.16	1.57	284.50
22.00	7.20	1.60	**286.32**
22.50	7.24	1.62	**285.84**
23.00	7.27	1.64	283.49
23.50	7.31	1.65	277.66
24.00	**7.34**	**1.67**	270.02
24.50	7.34	1.67	260.24
25.00	7.34	1.67	246.91
25.50	7.34	1.67	233.33
26.00	7.34	1.67	220.26
26.50	7.34	1.67	208.32
27.00	7.34	1.67	196.78
27.50	7.34	1.67	185.61
28.00	7.34	1.67	174.70
28.50	7.34	1.67	164.15
29.00	7.34	1.67	154.04
29.50	7.34	1.67	143.80
30.00	7.34	1.67	133.61
30.50	7.34	1.67	123.51
31.00	7.34	1.67	113.73
31.50	7.34	1.67	104.40
32.00	7.34	1.67	95.57
32.50	7.34	1.67	87.10
33.00	7.34	1.67	79.04
33.50	7.34	1.67	71.43
34.00	7.34	1.67	64.49
34.50	7.34	1.67	58.02
35.00	7.34	1.67	52.01
35.50	7.34	1.67	46.50
36.00	7.34	1.67	41.54
36.50	7.34	1.67	37.09
37.00	7.34	1.67	33.28
37.50	7.34	1.67	29.83
38.00	7.34	1.67	26.69
38.50	7.34	1.67	23.97
39.00	7.34	1.67	21.53
39.50	7.34	1.67	19.33
40.00	7.34	1.67	17.32
40.50	7.34	1.67	15.54
41.00	7.34	1.67	13.94
41.50	7.34	1.67	12.45
42.00	7.34	1.67	11.18
42.50	7.34	1.67	10.05
43.00	7.34	1.67	8.99
43.50	7.34	1.67	8.04
44.00	7.34	1.67	7.19
44.50	7.34	1.67	6.47
45.00	7.34	1.67	5.83
45.50	7.34	1.67	5.25
46.00	7.34	1.67	4.71
46.50	7.34	1.67	4.22
47.00	7.34	1.67	3.77
47.50	7.34	1.67	3.35
48.00	7.34	1.67	2.96

Summary for Reach 26R: (new Reach)

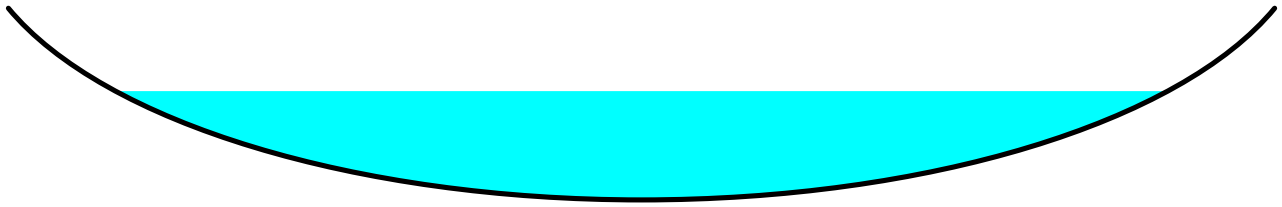
[79] Warning: Submerged Pond 25P Primary device # 1 by 1.82'

Inflow Area = 2,176.000 ac, 0.00% Impervious, Inflow Depth > 1.67" for 50 yr event
Inflow = 154.47 cfs @ 29.36 hrs, Volume= 302.358 af
Outflow = 154.47 cfs @ 29.48 hrs, Volume= 302.200 af, Atten= 0%, Lag= 7.3 min

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.36 fps, Min. Travel Time= 10.5 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 12.7 min

Peak Storage= 96,890 cf @ 29.48 hrs
Average Depth at Peak Storage= 2.27' , Surface Width= 75.33'
Bank-Full Depth= 4.00' Flow Area= 266.7 sf, Capacity= 526.56 cfs

100.00' x 4.00' deep Parabolic Channel, n= 0.070 Sluggish weedy reaches w/pools
Length= 850.0' Slope= 0.0024 '/'
Inlet Invert= 105.00', Outlet Invert= 103.00'



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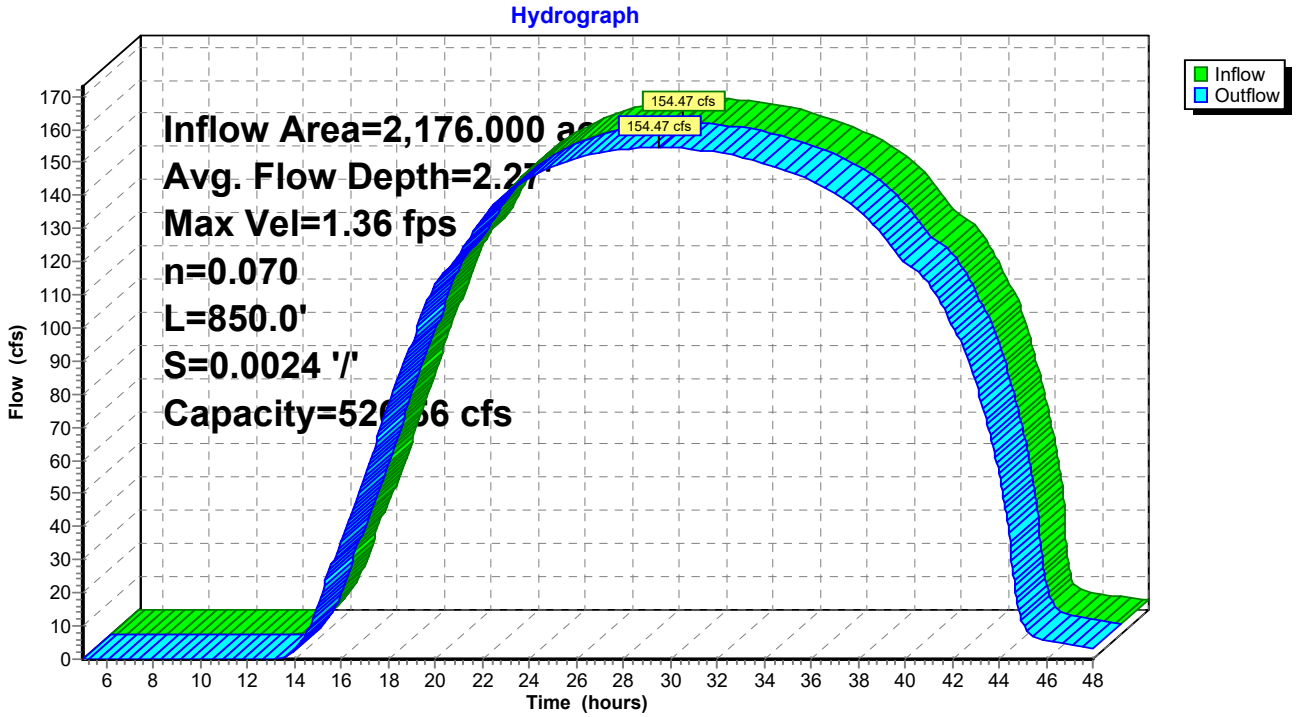
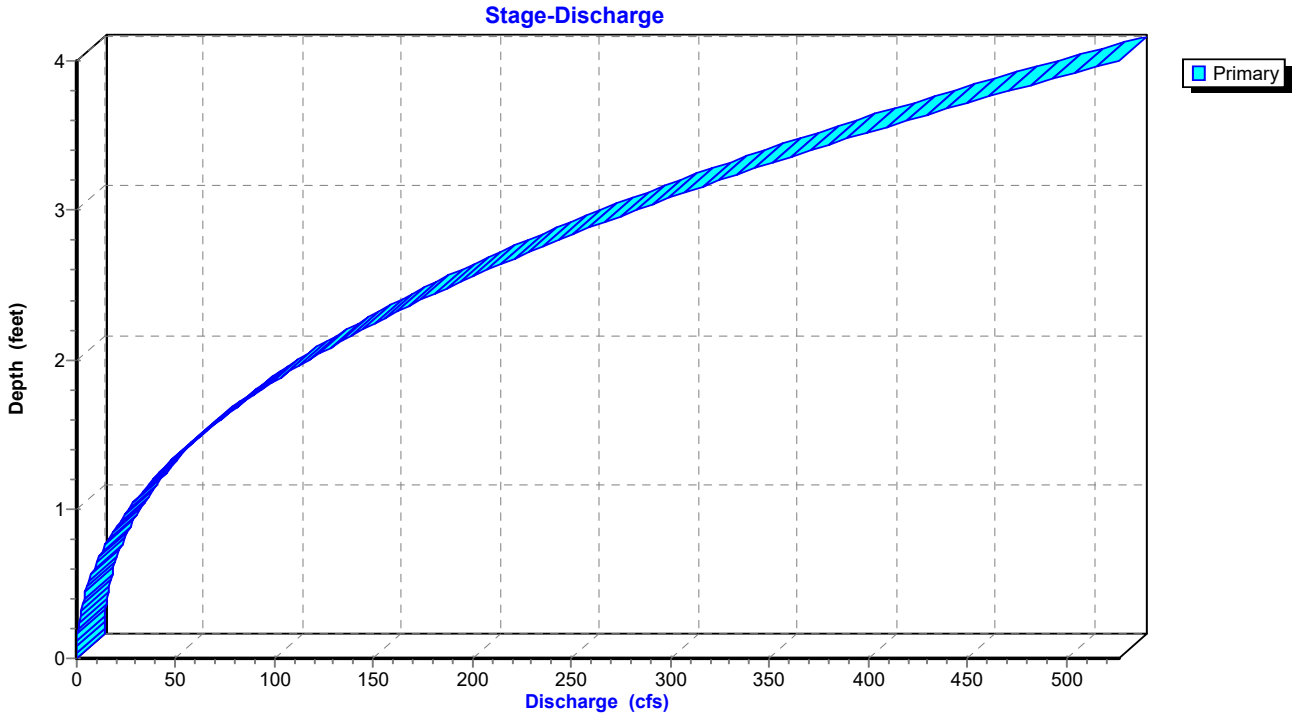
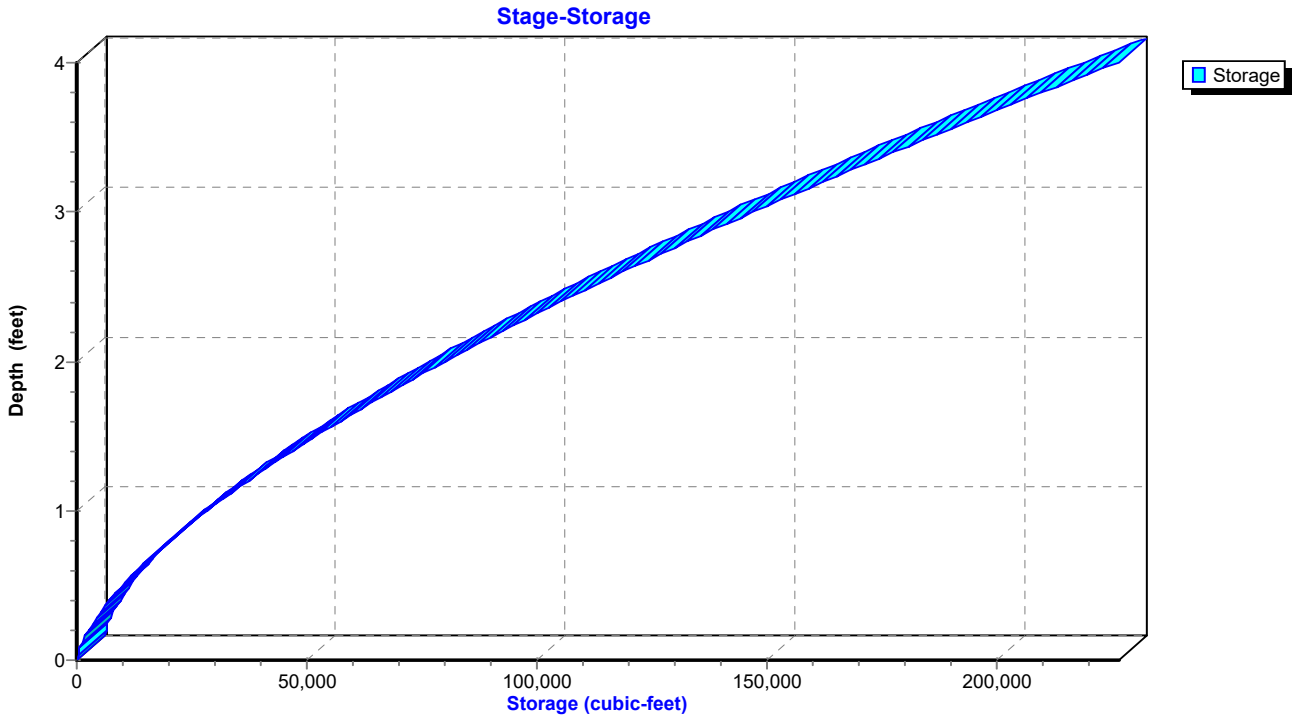


Reach 26R: (new Reach)



Reach 26R: (new Reach)



Hydrograph for Reach 26R: (new Reach)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
5.00	0.00	0	105.00	0.00
6.00	0.00	0	105.00	0.00
7.00	0.00	0	105.00	0.00
8.00	0.00	0	105.00	0.00
9.00	0.00	0	105.00	0.00
10.00	0.00	0	105.00	0.00
11.00	0.00	0	105.00	0.00
12.00	0.00	0	105.00	0.00
13.00	0.30	106	105.02	0.01
14.00	5.52	5,422	105.33	2.41
15.00	21.13	20,402	105.80	16.29
16.00	38.71	34,899	106.15	35.37
17.00	58.86	47,548	106.41	55.28
18.00	79.81	59,613	106.64	76.62
19.00	96.92	69,278	106.81	95.18
20.00	114.65	78,035	106.96	113.02
21.00	123.28	82,173	107.03	121.78
22.00	134.36	87,437	107.12	133.19
23.00	141.18	90,714	107.17	140.46
24.00	145.85	92,888	107.21	145.34
25.00	149.21	94,436	107.23	148.85
26.00	151.55	95,513	107.25	151.31
27.00	153.09	96,222	107.26	152.93
28.00	154.03	96,660	107.27	153.94
29.00	**154.44**	**96,866**	**107.27**	**154.41**
30.00	**154.38**	**96,863**	**107.27**	**154.40**
31.00	153.84	96,656	107.27	153.93
32.00	152.87	96,254	107.26	153.01
33.00	151.45	95,660	107.25	151.65
34.00	149.57	94,865	107.24	149.83
35.00	147.18	93,838	107.22	147.50
36.00	144.16	92,544	107.20	144.56
37.00	140.32	90,887	107.18	140.85
38.00	135.19	88,675	107.14	135.93
39.00	127.35	85,295	107.08	128.51
40.00	119.25	81,259	107.02	119.83
41.00	112.49	78,379	106.97	113.74
42.00	98.86	72,202	106.87	101.04
43.00	80.38	63,530	106.71	83.99
44.00	50.80	48,176	106.42	56.34
45.00	6.50	15,802	105.68	11.27
46.00	4.89	9,566	105.48	5.46
47.00	3.92	8,060	105.43	4.26
48.00	3.09	6,891	105.39	3.40

Stage-Discharge for Reach 26R: (new Reach)

Elevation (feet)	Velocity (ft/sec)	Discharge (cfs)
105.00	0.00	0.00
105.05	0.11	0.05
105.10	0.17	0.19
105.15	0.22	0.44
105.20	0.27	0.80
105.25	0.31	1.31
105.30	0.35	1.94
105.35	0.39	2.70
105.40	0.43	3.60
105.45	0.46	4.65
105.50	0.49	5.84
105.55	0.53	7.18
105.60	0.56	8.66
105.65	0.59	10.30
105.70	0.62	12.10
105.75	0.65	14.05
105.80	0.68	16.14
105.85	0.70	18.42
105.90	0.73	20.85
105.95	0.76	23.43
106.00	0.79	26.18
106.05	0.81	29.10
106.10	0.84	32.19
106.15	0.86	35.44
106.20	0.89	38.85
106.25	0.91	42.45
106.30	0.94	46.22
106.35	0.96	50.15
106.40	0.98	54.25
106.45	1.01	58.54
106.50	1.03	63.01
106.55	1.05	67.64
106.60	1.07	72.44
106.65	1.10	77.44
106.70	1.12	82.62
106.75	1.14	87.96
106.80	1.16	93.49
106.85	1.18	99.21
106.90	1.20	105.11
106.95	1.22	111.19
107.00	1.25	117.44
107.05	1.27	123.90
107.10	1.29	130.54
107.15	1.31	137.36
107.20	1.33	144.36
107.25	1.35	151.57
107.30	1.37	158.96
107.35	1.39	166.53
107.40	1.41	174.29
107.45	1.43	182.25
107.50	1.44	190.41
107.55	1.46	198.74
107.60	1.48	207.26
107.65	1.50	216.00
107.70	1.52	224.92
107.75	1.54	234.03
107.80	1.56	243.33
107.85	1.58	252.84
107.90	1.59	262.55
107.95	1.61	272.44
108.00	1.63	282.52
108.05	1.65	292.82
108.10	1.67	303.32
108.15	1.68	314.00
108.20	1.70	324.88
108.25	1.72	335.98
108.30	1.74	347.27
108.35	1.76	358.75
108.40	1.77	370.43
108.45	1.79	382.33
108.50	1.81	394.43
108.55	1.82	406.72
108.60	1.84	419.21
108.65	1.86	431.92
108.70	1.87	444.83
108.75	1.89	457.94
108.80	1.91	471.24
108.85	1.93	484.77
108.90	1.94	498.50
108.95	1.96	512.43
109.00	**1.97**	**526.56**

Stage-Area-Storage for Reach 26R: (new Reach)

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
105.00	0.0	0
105.05	0.4	330
105.10	1.1	909
105.15	1.9	1,654
105.20	3.0	2,534
105.25	4.2	3,548
105.30	5.5	4,663
105.35	6.9	5,872
105.40	8.4	7,168
105.45	10.1	8,558
105.50	11.8	10,023
105.55	13.6	11,561
105.60	15.5	13,168
105.65	17.5	14,852
105.70	19.5	16,599
105.75	21.7	18,407
105.80	23.9	20,274
105.85	26.1	22,207
105.90	28.5	24,196
105.95	30.9	26,238
106.00	33.3	28,333
106.05	35.9	30,488
106.10	38.5	32,692
106.15	41.1	34,945
106.20	43.8	37,245
106.25	46.6	39,600
106.30	49.4	42,000
106.35	52.3	44,445
106.40	55.2	46,934
106.45	58.2	49,474
106.50	61.2	52,055
106.55	64.3	54,678
106.60	67.5	57,343
106.65	70.7	60,054
106.70	73.9	62,805
106.75	77.2	65,595
106.80	80.5	68,424
106.85	83.9	71,297
106.90	87.3	74,207
106.95	90.8	77,155
107.00	94.3	80,139
107.05	97.8	83,165
107.10	101.4	86,227
107.15	105.1	89,324
107.20	108.8	92,455
107.25	112.5	95,627
107.30	116.3	98,833
107.35	120.1	102,072
107.40	123.9	105,345
107.45	127.8	108,656
107.50	131.8	112,000
107.55	135.7	115,376
107.60	139.7	118,784
107.65	143.8	122,229
107.70	147.9	125,705
107.75	152.0	129,212
107.80	156.2	132,750
107.85	160.4	136,324
107.90	164.6	139,927
107.95	168.9	143,561
108.00	173.2	147,224
108.05	177.6	150,922
108.10	181.9	154,649
108.15	186.4	158,405
108.20	190.8	162,189
108.25	195.3	166,007
108.30	199.8	169,854
108.35	204.4	173,728
108.40	209.0	177,630
108.45	213.6	181,564
108.50	218.3	185,526
108.55	223.0	189,515
108.60	227.7	193,531
108.65	232.4	197,579
108.70	237.2	201,653
108.75	242.1	205,754
108.80	246.9	209,881
108.85	251.8	214,039
108.90	256.7	218,222
108.95	261.7	222,432
109.00	**266.7**	**226,667**

Summary for Pond 24P: GM2 Storage

[58] Hint: Peaked 1.14' above defined flood level

Inflow Area = 2,176.000 ac, 0.00% Impervious, Inflow Depth > 1.67" for 50 yr event
Inflow = 286.62 cfs @ 22.33 hrs, Volume= 302.441 af
Outflow = 154.51 cfs @ 28.98 hrs, Volume= 302.441 af, Atten= 46%, Lag= 399.0 min
Primary = 154.51 cfs @ 28.98 hrs, Volume= 302.441 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 112.14' @ 28.98 hrs Surf.Area= 3,127,849 sf Storage= 4,206,694 cf
Flood Elev= 111.00' Surf.Area= 1,013,759 sf Storage= 1,772,417 cf

Plug-Flow detention time= 297.1 min calculated for 302.441 af (100% of inflow)
Center-of-Mass det. time= 297.1 min (1,800.5 - 1,503.4)

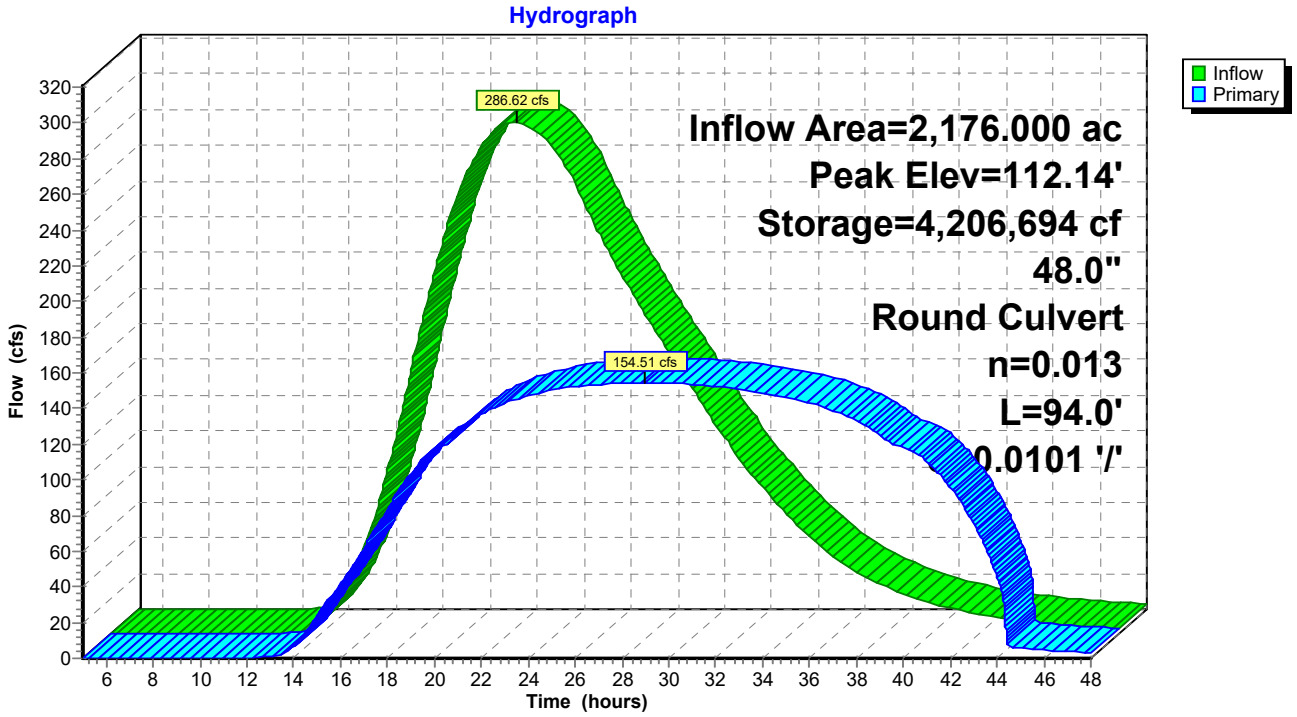
Volume	Invert	Avail.Storage	Storage Description
#1	105.18'	7,229,344 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
105.18	0	0	0
106.00	100	41	41
107.00	5,529	2,815	2,855
108.00	142,769	74,149	77,005
109.00	393,594	268,182	345,186
110.00	723,554	558,574	903,760
111.00	1,013,759	868,657	1,772,417
112.00	3,005,490	2,009,625	3,782,041
113.00	3,889,115	3,447,303	7,229,344

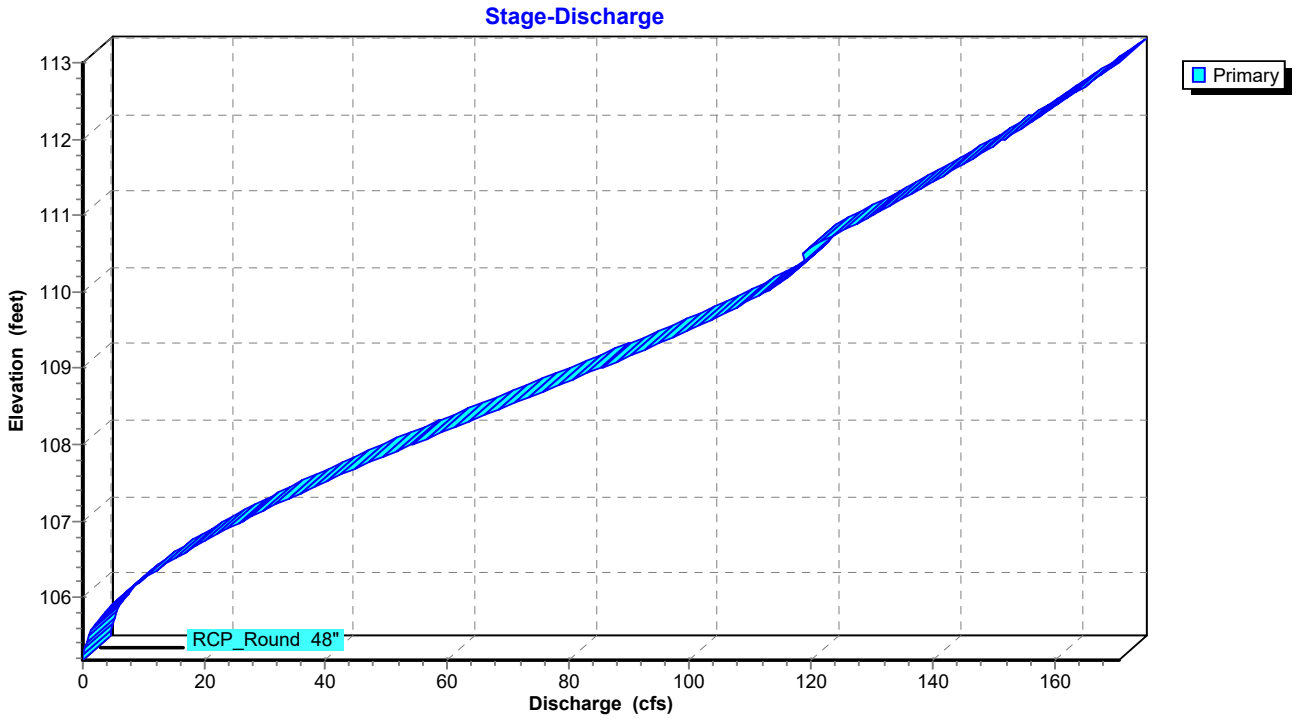
Device	Routing	Invert	Outlet Devices
#1	Primary	105.18'	**48.0" Round RCP_Round 48"** L= 94.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 105.18' / 104.23' S= 0.0101 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=154.51 cfs @ 28.98 hrs HW=112.14' (Free Discharge)
↑—**1=RCP_Round 48"** (Barrel Controls 154.51 cfs @ 12.30 fps)

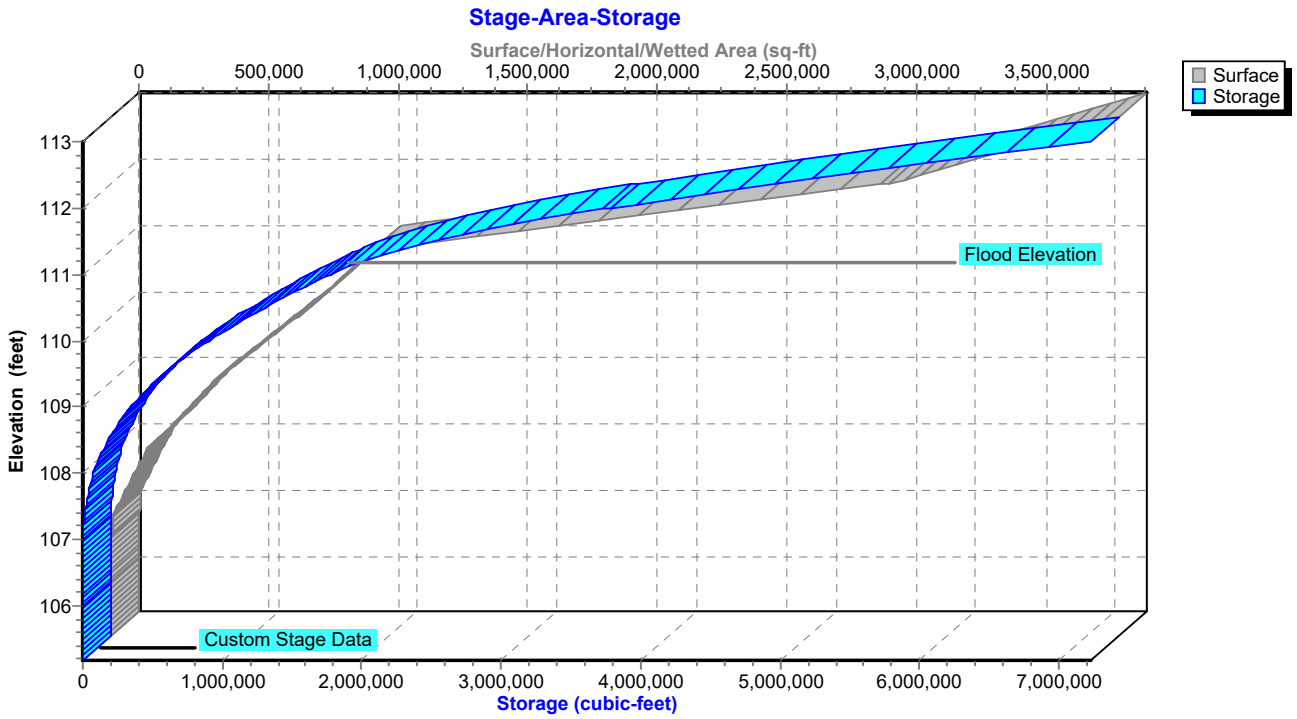
Pond 24P: GM2 Storage



Pond 24P: GM2 Storage



Pond 24P: GM2 Storage



Hydrograph for Pond 24P: GM2 Storage

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	105.18	0.00
6.00	0.00	0	105.18	0.00
7.00	0.00	0	105.18	0.00
8.00	0.00	0	105.18	0.00
9.00	0.00	0	105.18	0.00
10.00	0.00	0	105.18	0.00
11.00	0.00	0	105.18	0.00
12.00	0.06	0	105.26	0.06
13.00	1.01	7	105.51	1.01
14.00	7.05	55	106.05	6.97
15.00	25.63	2,394	106.91	24.18
16.00	56.44	27,368	107.56	41.26
17.00	101.25	121,248	108.25	62.03
18.00	158.87	326,195	108.95	83.71
19.00	211.68	658,445	109.63	103.41
20.00	252.45	1,099,175	110.26	117.06
21.00	276.36	1,620,472	110.85	126.41
22.00	**286.32**	2,164,011	111.30	136.89
23.00	**283.49**	2,687,475	111.58	142.95
24.00	270.02	3,163,902	111.78	147.20
25.00	246.91	3,562,309	111.92	150.22
26.00	220.26	3,857,893	112.03	152.25
27.00	196.78	4,057,338	112.09	153.55
28.00	174.70	**4,171,505**	**112.13**	**154.28**
29.00	154.04	**4,206,720**	**112.14**	**154.51**
30.00	133.61	4,168,502	112.13	154.26
31.00	113.73	4,059,206	112.09	153.56
32.00	95.57	3,884,405	112.03	152.42
33.00	79.04	3,652,100	111.96	150.85
34.00	64.49	3,370,319	111.86	148.81
35.00	52.01	3,048,108	111.73	146.24
36.00	41.54	2,694,875	111.58	143.03
37.00	33.28	2,321,103	111.39	138.93
38.00	26.69	1,937,831	111.14	133.37
39.00	21.53	1,558,612	110.78	124.85
40.00	17.32	1,193,963	110.37	118.42
41.00	13.94	836,149	109.90	110.24
42.00	11.18	508,324	109.36	95.91
43.00	8.99	233,995	108.69	75.51
44.00	7.19	40,411	107.70	45.36
45.00	5.83	38	105.97	5.84
46.00	4.71	31	105.89	4.71
47.00	3.77	24	105.81	3.77
48.00	2.96	19	105.74	2.96

Stage-Discharge for Pond 24P: GM2 Storage

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
105.18	0.00	107.26	33.04	109.34	95.35	111.42	139.58
105.22	0.01	107.30	34.11	109.38	96.50	111.46	140.46
105.26	0.05	107.34	35.19	109.42	97.64	111.50	141.32
105.30	0.12	107.38	36.29	109.46	98.77	111.54	142.19
105.34	0.23	107.42	37.39	109.50	99.89	111.58	143.04
105.38	0.36	107.46	38.50	109.54	100.99	111.62	143.89
105.42	0.53	107.50	39.63	109.58	102.08	111.66	144.74
105.46	0.73	107.54	40.76	109.62	103.15	111.70	145.58
105.50	0.96	107.58	41.90	109.66	104.21	111.74	146.42
105.54	1.23	107.62	43.04	109.70	105.25	111.78	147.25
105.58	1.52	107.66	44.20	109.74	106.27	111.82	148.08
105.62	1.84	107.70	45.36	109.78	107.28	111.86	148.90
105.66	2.19	107.74	46.53	109.82	108.26	111.90	149.72
105.70	2.57	107.78	47.71	109.86	109.22	111.94	150.53
105.74	2.97	107.82	48.89	109.90	110.15	111.98	151.34
105.78	3.41	107.86	50.08	109.94	111.06	112.02	152.15
105.82	3.86	107.90	51.28	109.98	111.94	112.06	152.95
105.86	4.34	107.94	52.48	110.02	112.80	112.10	153.74
105.90	4.85	107.98	53.69	110.06	113.62	112.14	154.54
105.94	5.38	108.02	54.90	110.10	114.40	112.18	155.32
105.98	5.93	108.06	56.12	110.14	115.15	112.22	156.11
106.02	6.51	108.10	57.34	110.18	115.85	112.26	156.89
106.06	7.10	108.14	58.56	110.22	116.51	112.30	157.67
106.10	7.72	108.18	59.79	110.26	117.12	112.34	158.44
106.14	8.36	108.22	61.02	110.30	117.66	112.38	159.21
106.18	9.02	108.26	62.26	110.34	118.14	112.42	159.97
106.22	9.70	108.30	63.50	110.38	118.53	112.46	160.74
106.26	10.40	108.34	64.74	110.42	118.81	112.50	161.49
106.30	11.11	108.38	65.98	110.46	118.92	112.54	162.25
106.34	11.85	108.42	67.23	110.50	118.68	112.58	163.00
106.38	12.60	108.46	68.47	110.54	118.78	112.62	163.75
106.42	13.38	108.50	69.72	110.58	119.81	112.66	164.49
106.46	14.16	108.54	70.97	110.62	120.82	112.70	165.23
106.50	14.97	108.58	72.21	110.66	121.83	112.74	165.97
106.54	15.79	108.62	73.46	110.70	122.83	112.78	166.70
106.58	16.63	108.66	74.71	110.74	123.82	112.82	167.44
106.62	17.49	108.70	75.95	110.78	124.80	112.86	168.16
106.66	18.35	108.74	77.20	110.82	125.77	112.90	168.89
106.70	19.24	108.78	78.44	110.86	126.74	112.94	169.61
106.74	20.14	108.82	79.68	110.90	127.70	112.98	**170.33**
106.78	21.05	108.86	80.91	110.94	128.66		
106.82	21.98	108.90	82.15	110.98	129.60		
106.86	22.92	108.94	83.38	111.02	130.54		
106.90	23.88	108.98	84.60	111.06	131.47		
106.94	24.85	109.02	85.82	111.10	132.40		
106.98	25.83	109.06	87.04	111.14	133.32		
107.02	26.82	109.10	88.25	111.18	134.23		
107.06	27.83	109.14	89.45	111.22	135.14		
107.10	28.85	109.18	90.65	111.26	136.04		
107.14	29.88	109.22	91.84	111.30	136.93		
107.18	30.92	109.26	93.02	111.34	137.82		
107.22	31.97	109.30	94.19	111.38	138.71		

Stage-Area-Storage for Pond 24P: GM2 Storage

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
105.18	0	0
105.28	12	1
105.38	24	2
105.48	37	5
105.58	49	10
105.68	61	15
105.78	73	22
105.88	85	30
105.98	98	39
106.08	534	66
106.18	1,077	147
106.28	1,620	282
106.38	2,163	471
106.48	2,706	714
106.58	3,249	1,012
106.68	3,792	1,364
106.78	4,335	1,771
106.88	4,878	2,231
106.98	5,420	2,746
107.08	16,508	3,737
107.18	30,232	6,074
107.28	43,956	9,783
107.38	57,680	14,865
107.48	71,404	21,319
107.58	85,128	29,146
107.68	98,852	38,345
107.78	112,576	48,917
107.88	126,300	60,860
107.98	140,024	74,177
108.08	162,835	89,229
108.18	187,918	106,766
108.28	213,000	126,812
108.38	238,083	149,366
108.48	263,165	174,429
108.58	288,248	201,999
108.68	313,330	232,078
108.78	338,413	264,665
108.88	363,495	299,761
108.98	388,578	337,364
109.08	419,991	377,729
109.18	452,987	421,378
109.28	485,983	468,327
109.38	518,979	518,575
109.48	551,975	572,123
109.58	584,971	628,970
109.68	617,967	689,117
109.78	650,963	752,563
109.88	683,959	819,309
109.98	716,955	889,355
110.08	746,770	962,573
110.18	775,791	1,038,701
110.28	804,811	1,117,731
110.38	833,832	1,199,663
110.48	862,852	1,284,498
110.58	891,873	1,372,234
110.68	920,893	1,462,872
110.78	949,914	1,556,412
110.88	978,934	1,652,855
110.98	1,007,955	1,752,199
111.08	1,173,097	1,859,891
111.18	1,372,271	1,987,159
111.28	1,571,444	2,134,345
111.38	1,770,617	2,301,448
111.48	1,969,790	2,488,468
111.58	2,168,963	2,695,406
111.68	2,368,136	2,922,261
111.78	2,567,309	3,169,033
111.88	2,766,482	3,435,723
111.98	2,965,655	3,722,330
112.08	3,076,180	4,025,308
112.18	3,164,543	4,337,344
112.28	3,252,905	4,658,216
112.38	3,341,268	4,987,925
112.48	3,429,630	5,326,470
112.58	3,517,993	5,673,851
112.68	3,606,355	6,030,068
112.78	3,694,718	6,395,122
112.88	3,783,080	6,769,012
112.98	**3,871,443**	**7,151,738**

Summary for Pond 25P: Diamond Oaks 48"

[81] Warning: Exceeded Pond 24P by 1.67' @ 44.43 hrs

Inflow Area = 2,176.000 ac, 0.00% Impervious, Inflow Depth > 1.67" for 50 yr event
Inflow = 154.51 cfs @ 28.98 hrs, Volume= 302.441 af
Outflow = 154.47 cfs @ 29.36 hrs, Volume= 302.358 af, Atten= 0%, Lag= 23.1 min
Primary = 154.47 cfs @ 29.36 hrs, Volume= 302.358 af

Routing by Stor-Ind method, Time Span= 5.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 112.86' @ 29.36 hrs Surf.Area= 31,110 sf Storage= 118,343 cf

Plug-Flow detention time= 11.9 min calculated for 302.287 af (100% of inflow)
Center-of-Mass det. time= 11.6 min (1,812.0 - 1,800.5)

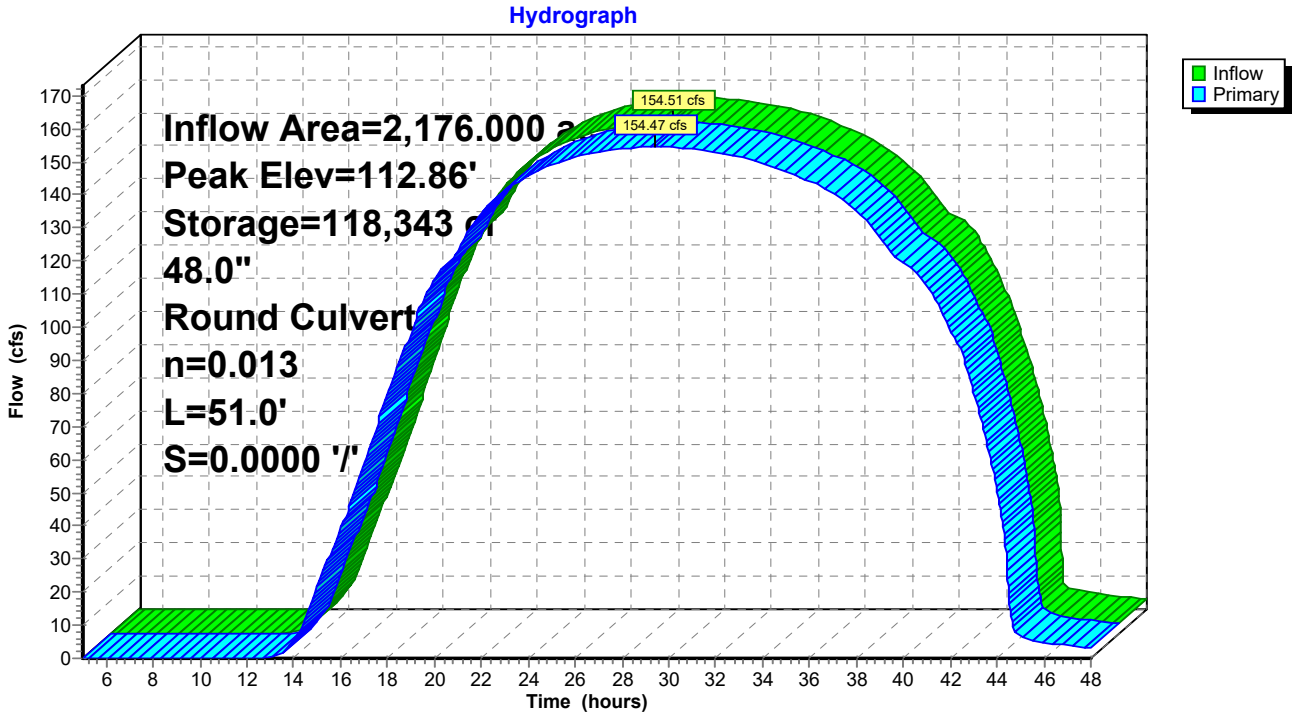
Volume	Invert	Avail.Storage	Storage Description
#1	105.00'	122,814 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
105.00	709	0	0
106.00	4,008	2,359	2,359
107.00	8,650	6,329	8,688
108.00	11,865	10,258	18,945
109.00	14,264	13,065	32,010
110.00	17,200	15,732	47,742
111.00	23,064	20,132	67,874
112.00	27,558	25,311	93,185
113.00	31,700	29,629	122,814

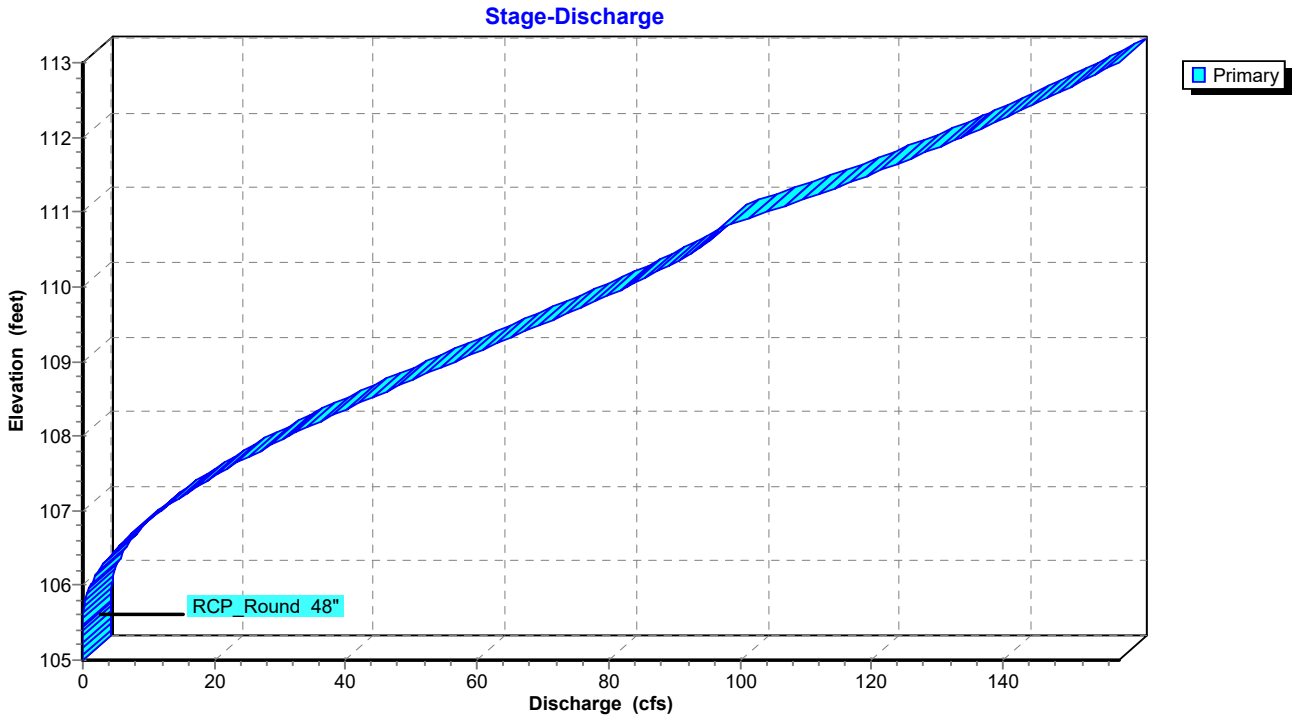
Device	Routing	Invert	Outlet Devices
#1	Primary	105.45'	**48.0" Round RCP_Round 48"** L= 51.0' RCP, groove end w/headwall, Ke= 0.200 Inlet / Outlet Invert= 105.45' / 105.45' S= 0.0000 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf

Primary OutFlow Max=154.47 cfs @ 29.36 hrs HW=112.86' (Free Discharge)
1=RCP_Round 48" (Barrel Controls 154.47 cfs @ 12.29 fps)

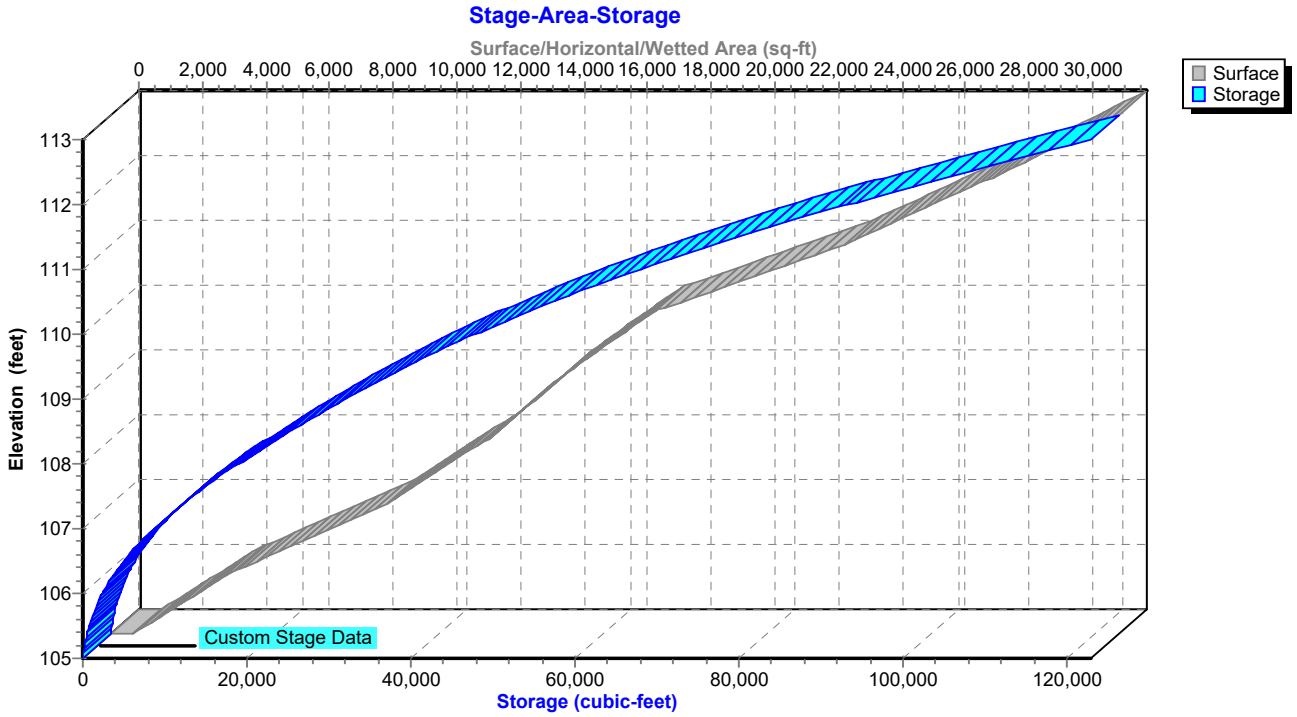
Pond 25P: Diamond Oaks 48"



Pond 25P: Diamond Oaks 48"



Pond 25P: Diamond Oaks 48"



Hydrograph for Pond 25P: Diamond Oaks 48"

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
5.00	0.00	0	105.00	0.00
6.00	0.00	0	105.00	0.00
7.00	0.00	0	105.00	0.00
8.00	0.00	0	105.00	0.00
9.00	0.00	0	105.00	0.00
10.00	0.00	0	105.00	0.00
11.00	0.00	0	105.00	0.00
12.00	0.06	9	105.01	0.00
13.00	1.01	1,462	105.75	0.30
14.00	6.97	5,102	106.52	5.52
15.00	24.18	13,626	107.52	21.13
16.00	41.26	22,675	108.30	38.71
17.00	62.03	33,208	109.08	58.86
18.00	83.71	45,706	109.88	79.81
19.00	103.41	62,590	110.76	96.92
20.00	117.06	75,660	111.33	114.65
21.00	126.41	83,054	111.62	123.28
22.00	136.89	93,963	112.03	134.36
23.00	142.95	101,534	112.30	141.18
24.00	147.20	107,124	112.49	145.85
25.00	150.22	111,360	112.63	149.21
26.00	152.25	114,408	112.73	151.55
27.00	153.55	116,469	112.80	153.09
28.00	**154.28**	117,736	112.84	154.03
29.00	**154.51**	**118,303**	**112.86**	**154.44**
30.00	154.26	**118,213**	**112.85**	**154.38**
31.00	153.56	117,487	112.83	153.84
32.00	152.42	116,170	112.79	152.87
33.00	150.85	114,282	112.73	151.45
34.00	148.81	111,824	112.64	149.57
35.00	146.24	108,777	112.54	147.18
36.00	143.03	105,065	112.42	144.16
37.00	138.93	100,550	112.26	140.32
38.00	133.37	94,856	112.06	135.19
39.00	124.85	86,872	111.77	127.35
40.00	118.42	79,483	111.48	119.25
41.00	110.24	73,960	111.26	112.49
42.00	95.91	64,385	110.85	98.86
43.00	75.51	46,101	109.90	80.38
44.00	45.36	28,920	108.78	50.80
45.00	5.84	5,672	106.61	6.50
46.00	4.71	4,729	106.47	4.89
47.00	3.77	4,144	106.37	3.92
48.00	2.96	3,630	106.27	3.09

Stage-Discharge for Pond 25P: Diamond Oaks 48"

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
105.00	0.00	107.08	13.13	109.16	60.91	111.24	111.96
105.04	0.00	107.12	13.79	109.20	61.98	111.28	113.20
105.08	0.00	107.16	14.47	109.24	63.05	111.32	114.43
105.12	0.00	107.20	15.15	109.28	64.12	111.36	115.65
105.16	0.00	107.24	15.85	109.32	65.19	111.40	116.85
105.20	0.00	107.28	16.57	109.36	66.26	111.44	118.05
105.24	0.00	107.32	17.29	109.40	67.33	111.48	119.23
105.28	0.00	107.36	18.03	109.44	68.39	111.52	120.40
105.32	0.00	107.40	18.78	109.48	69.45	111.56	121.55
105.36	0.00	107.44	19.55	109.52	70.51	111.60	122.70
105.40	0.00	107.48	20.33	109.56	71.56	111.64	123.84
105.44	0.00	107.52	21.11	109.60	72.61	111.68	124.96
105.48	0.00	107.56	21.91	109.64	73.66	111.72	126.08
105.52	0.01	107.60	22.73	109.68	74.70	111.76	127.18
105.56	0.02	107.64	23.55	109.72	75.73	111.80	128.28
105.60	0.05	107.68	24.38	109.76	76.76	111.84	129.37
105.64	0.09	107.72	25.23	109.80	77.78	111.88	130.45
105.68	0.15	107.76	26.09	109.84	78.79	111.92	131.51
105.72	0.22	107.80	26.95	109.88	79.80	111.96	132.57
105.76	0.31	107.84	27.83	109.92	80.79	112.00	133.63
105.80	0.42	107.88	28.72	109.96	81.78	112.04	134.67
105.84	0.55	107.92	29.62	110.00	82.75	112.08	135.71
105.88	0.69	107.96	30.52	110.04	83.71	112.12	136.74
105.92	0.86	108.00	31.44	110.08	84.66	112.16	137.76
105.96	1.04	108.04	32.36	110.12	85.59	112.20	138.77
106.00	1.24	108.08	33.30	110.16	86.51	112.24	139.77
106.04	1.46	108.12	34.24	110.20	87.41	112.28	140.77
106.08	1.69	108.16	35.19	110.24	88.30	112.32	141.76
106.12	1.95	108.20	36.15	110.28	89.16	112.36	142.75
106.16	2.22	108.24	37.12	110.32	90.01	112.40	143.73
106.20	2.51	108.28	38.09	110.36	90.83	112.44	144.70
106.24	2.82	108.32	39.08	110.40	91.63	112.48	145.66
106.28	3.14	108.36	40.07	110.44	92.40	112.52	146.62
106.32	3.49	108.40	41.06	110.48	93.13	112.56	147.57
106.36	3.85	108.44	42.07	110.52	93.84	112.60	148.52
106.40	4.23	108.48	43.08	110.56	94.50	112.64	149.46
106.44	4.62	108.52	44.09	110.60	95.12	112.68	150.39
106.48	5.03	108.56	45.11	110.64	95.69	112.72	151.32
106.52	5.46	108.60	46.14	110.68	96.18	112.76	152.24
106.56	5.91	108.64	47.17	110.72	96.59	112.80	153.16
106.60	6.37	108.68	48.21	110.76	96.83	112.84	154.07
106.64	6.85	108.72	49.25	110.80	97.23	112.88	154.98
106.68	7.34	108.76	50.29	110.84	98.66	112.92	155.88
106.72	7.85	108.80	51.34	110.88	100.07	112.96	156.78
106.76	8.38	108.84	52.40	110.92	101.46	113.00	**157.67**
106.80	8.92	108.88	53.45	110.96	102.83		
106.84	9.48	108.92	54.51	111.00	104.18		
106.88	10.05	108.96	55.58	111.04	105.52		
106.92	10.64	109.00	56.64	111.08	106.84		
106.96	11.24	109.04	57.71	111.12	108.14		
107.00	11.86	109.08	58.77	111.16	109.43		
107.04	12.49	109.12	59.84	111.20	110.70		

Stage-Area-Storage for Pond 25P: Diamond Oaks 48"

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
105.00	709	0
105.10	1,039	87
105.20	1,369	208
105.30	1,699	361
105.40	2,029	548
105.50	2,359	767
105.60	2,688	1,019
105.70	3,018	1,305
105.80	3,348	1,623
105.90	3,678	1,974
106.00	4,008	2,359
106.10	4,472	2,783
106.20	4,936	3,253
106.30	5,401	3,770
106.40	5,865	4,333
106.50	6,329	4,943
106.60	6,793	5,599
106.70	7,257	6,301
106.80	7,722	7,050
106.90	8,186	7,846
107.00	8,650	8,688
107.10	8,971	9,569
107.20	9,293	10,482
107.30	9,614	11,427
107.40	9,936	12,405
107.50	10,258	13,414
107.60	10,579	14,456
107.70	10,901	15,530
107.80	11,222	16,636
107.90	11,544	17,775
108.00	11,865	18,945
108.10	12,105	20,143
108.20	12,345	21,366
108.30	12,585	22,612
108.40	12,825	23,883
108.50	13,065	25,177
108.60	13,304	26,496
108.70	13,544	27,838
108.80	13,784	29,205
108.90	14,024	30,595
109.00	14,264	32,010
109.10	14,558	33,451
109.20	14,851	34,921
109.30	15,145	36,421
109.40	15,438	37,950
109.50	15,732	39,509
109.60	16,026	41,096
109.70	16,319	42,714
109.80	16,613	44,360
109.90	16,906	46,036
110.00	17,200	47,742
110.10	17,786	49,491
110.20	18,373	51,299
110.30	18,959	53,165
110.40	19,546	55,091
110.50	20,132	57,075
110.60	20,718	59,117
110.70	21,305	61,218
110.80	21,891	63,378
110.90	22,478	65,596
111.00	23,064	67,874
111.10	23,513	70,202
111.20	23,963	72,576
111.30	24,412	74,995
111.40	24,862	77,459
111.50	25,311	79,967
111.60	25,760	82,521
111.70	26,210	85,119
111.80	26,659	87,763
111.90	27,109	90,451
112.00	27,558	93,185
112.10	27,972	95,961
112.20	28,386	98,779
112.30	28,801	101,638
112.40	29,215	104,539
112.50	29,629	107,481
112.60	30,043	110,465
112.70	30,457	113,490
112.80	30,872	116,556
112.90	31,286	119,664
113.00	**31,700**	**122,814**

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

To: Ethan Maskiell, GM2 Associates, Inc.
197 Loudon Rd, Suite 310
Concord, NH 03281

From: NHB Review, NH Natural Heritage Bureau
Date: 10/25/2022 (valid until 10/25/2023)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Alteration of Terrain Permit, NHDES - Wetland Standard Dredge & Fill - Major, USACE - General Permit, USCEQ - Federal: NEPA Review

NHB ID: **NHB22-3323** Town: Plaistow and Kingston Location: NH Route 125
Description: The project involves improvements to a 1.8-mile segment of NH Route 125 in the towns of Kingston and Plaistow. Proposed work includes reconstructing NH Route 125 from a two-lane section to a three-lane section that includes a two-way center left-turn lane throughout. The project also includes side road improvements, intersection consolidation and realignments, drainage work, and the addition of stormwater treatment areas.

cc: NHFG Review

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

Comments **NHB: No comments at this time.**
F&G: Please refer to NHFG consultation requirements below.

Vertebrate species	State[1]	Federal	Notes
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Northern Black Racer (*Coluber constrictor constrictor*)	T	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

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

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

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

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For all animal reviews, refer to 'IMPORTANT: NHFG Consultation' section below.

Disclaimer: 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.

IMPORTANT: NHFG Consultation

If this NHB Datacheck letter DOES NOT include ANY wildlife species records, then, based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

If this NHB Datacheck letter includes a record for a threatened (T) or endangered (E) wildlife species, consultation with the New Hampshire Fish and Game Department under Fis 1004 may be required. To review the Fis 1000 rules (effective February 3, 2022), please go to https://wildlife.state.nh.us/wildlife/environmental-review.html. All requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent by mail, and **must include the NHB Datacheck results letter number and "Fis 1004 consultation request" in the subject line.**

If the NHB DataCheck response letter does not include a threatened or endangered wildlife species but includes other wildlife species (e.g., Species of Special Concern), consultation under Fis 1004 is not required; however, some species are protected under other state laws or rules, so coordination with NH Fish & Game is highly recommended or may be required for certain permits. While some permitting processes are exempt from required consultation under Fis 1004 (e.g., *statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule)*, coordination with NH Fish & Game may still be required under the rules governing those specific permitting processes, and it is recommended you contact the applicable permitting agency. For projects not requiring consultation under Fis 1004, but where additional coordination with NH Fish and Game is requested, please email: Kim Tuttle *kim.tuttle@wildlife.nh.gov* with a copy to NHFGreview@wildlife.nh.gov, and include the NHB Datacheck results letter number and "review request" in the email subject line.

Contact NH Fish & Game at (603) 271-0467 with questions.

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

Jennifer Riordan

From: Laurin, Marc <marc.g.laurin@dot.nh.gov>
Sent: Monday, April 3, 2023 8:21 AM
To: Lampron, Matthew; Corliss, Kathleen; Spetelunas, Corey; Jennifer Riordan
Cc: Darren Blood
Subject: FW: [WARNING-EXT] NHB22-3323 NH Route 125 improvements NHDES Standard Dredge & Fill - Major, Plaistow Kingston 10044E

FYI – response to Fish and Game conservation recommendations.

Marc

From: Martin, Rebecca <Rebecca.A.Martin@dot.nh.gov>
Sent: Friday, March 31, 2023 1:31 PM
To: Newton, Kevin <Kevin.M.Newton@wildlife.nh.gov>
Cc: Laurin, Marc <marc.g.laurin@dot.nh.gov>; FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>
Subject: RE: [WARNING-EXT] NHB22-3323 NH Route 125 improvements NHDES Standard Dredge & Fill - Major, Plaistow Kingston 10044E

Hello Kevin,

Thank you for your review and your input on the Plaistow Kingston 10044E project. We had an opportunity to discuss the conservation recommendations with the engineers working on the project design and with our Water Quality Program Manager and we have the following recommendations/changes. Can you please review and let us know if these are acceptable or if you would like to discuss further?

New Hampshire Fish and Game Conservation Recommendations:

1. Blanding's turtle (State endangered), Northern Black Racer (State threatened), and Spotted Turtle (State threatened) occur within the vicinity of the project area. All operators and personnel working on or entering the site shall be made aware of the potential presence of these species and shall be provided flyers that help to identify these species, along with NHFG contact information.

   Northern Black Racer and Rare Turtles flyers and F&G contact information will be included in the Contract Documents along with a commitment in the Summary of Environmental Issues to make personnel working on the project aware of the potential presence of protected turtles and snakes.

2. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings prior to work commencement during the construction phase of the project. See Plan Sheet xxxxxx. Include attached flyers to plan sheet set.

   Northern Black Racer and Rare Turtles flyers and F&G contact information will be included in the Contract Documents along with a commitment in the Summary of Environmental Issues to make personnel working on the project aware of the potential presence of protected turtles and snakes. The plans are also available in the contract documents. The potential presence of protected snakes and turtles will be relayed at the pre-construction meeting and flyers will be posted on a project bulletin board.

3. Observations of Northern Black Racers in the months of April-May and September-October may indicate the potential for a den site on or near the project site. Observations of this species during this timeframe shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Environmental Review Program. Please contact Melissa Winters (603-479-1129) or Brendan Clifford (603-944-0885). Observations of this species outside of this timeframe can follow general reporting guidance. Please include photograph with text if feasible.

   This will be included as a commitment in the Summary of Environmental Issues (which is included in the contract documents).

4. Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th). All turtle species nests are protected by NH laws. If a nest is observed or suspected, operators shall contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.

   This will be included as a commitment in the Summary of Environmental Issues (which is included in the contract documents).

5. No sumps shall be included in the design of catch basins or outlet control structures when located near or within grassy areas to avoid the entrapment of rare wildlife species.

   Sumps collect sediment and minimize the potential for clogging within pipes. In addition, sumps are a Stormwater Pre-Treatment Practice (Env-Wq 1508.15), and are included in the NHDES NH Stormwater Manual as a Standard Practice. They are reasonably effective in removing fine and very fine sediment (approximately 20%). Sumps are intended to be included in the 10044E project and shown on the plans.

6. Outlet control structures in storm water treatment areas shall not be placed adjacent to the side slopes but rather as far away as possible to deter wildlife crawling onto them and falling through the grate openings. These structures shall be a minimum 12”-18” above grade. See Plan sheet(s) dated XXXXXX for specs.

   This will be included in the project design.

7. A native pollinator seed mix shall be used, if necessary, to restore disturbed areas. Seed mixes shall be low-growing species in order to minimize the need for mowing.

   Mowing schedules are determined by each District. This area is anticipated to be mowed once or twice per year. NHDOT does not currently have a native pollinator seed mix, but we are participating in a research project in hopes of having one available in the future: 21-3 Initiating Seed Production for Effective Establishment of Native Plants on Roadsides in New England (newenglandtransportationconsortium.org) NHDOT does have a wildflower seed mix, which will be used within NHDOT ROW in suitable areas for this project.

8. Fertilizer shall not be used within 100 feet of wetlands. If fertilizer is required for restoration efforts, a low-phosphorous fertilizer shall be used.

   A low-phosphorous fertilizer shall be used within 100 feet of wetlands.

9. All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches.

   Wildlife friendly erosion control will be used for this project.

10. All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation.

    This will be included as a commitment in the Summary of Environmental Issues (which is included in the contract documents).

11. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible.

    This will be included as a commitment in the Summary of Environmental Issues (which is included in the contract documents).

12. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.

    This will be included as a commitment in the Summary of Environmental Issues (which is included in the contract documents).

13. NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

    Please contact the NHDOT's Contract Administrator or Environmental Coordinator, Darrel Elliot 603-419-9822, for the project to coordinate access to the site. Please ensure any F&G employees, or authorized agents, are accompanied by NHDOT personnel to ensure their safe access within construction zones.

Additional Recommendations:

1. Wood turtles (State species of special concern) occur within the vicinity of the project area. Site operators should be informed of the potential presence of this species and should be provided flyers that help to identify this species along with NHFG contact information should they be encountered during project activities.

    The Rare Turtles flyer will be included in the contract documents and the Summary of Environmental Issues will include a commitment to make personnel aware of the potential presence of this species and a requirement to contact F&G if they are encountered in the project area.

Best wishes,
Rebecca

Rebecca Martin
Plant and Wildlife Program Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
Rebecca.A.Martin@dot.nh.gov

From: Newton, Kevin <Kevin.M.Newton@wildlife.nh.gov>
Sent: Friday, February 3, 2023 2:07 PM
To: Jennifer Riordan <JRiordan@GM2INC.COM>
Cc: FGC: NHFG review <NHFGreview@wildlife.nh.gov>; Winters, Melissa <Melissa.J.Winters@wildlife.nh.gov>; Mauck, Ridgely <Addison.R.Mauck@des.nh.gov>; Lewis, Eben <EBEN.M.LEWIS@des.nh.gov>
Subject: [WARNING-EXT] NHB22-3323 NH Route 125 improvements NHDES AoT and Standard Dredge & Fill - Major

Good afternoon,

New Hampshire Fish and Game has completed review of materials submitted for consultation on 12/28/2022 for NHB22-3323 (*site plans with a final revision date of 11/04/2022*) prepared by GM2 and The State of New Hampshire Department of Transportation. The proposed project is for improvements along 1.8 miles of NH Route 125 in the towns of Kingston and Plaistow, NH. Proposed improvements include reconstruction NH Route 125 from a two-lane section to a three-lane section that includes a two-way center left-turn lane throughout. The project also includes side road improvements, intersections consolation and realignments, drainage work, and the addition of five storm water treatment areas.

Applications associated with this review:

- NHDES – Alteration of Terrain – application pending
- DES – Standard Dredge & Fill Wetlands Permit – Major – application pending

Based on the NHB datacheck results letter and the information provided in the submission, we request the following recommended permit conditions. THESE RECOMMENDED PERMIT CONDITIONS ARE APPLICABLE TO ALL STATE PERMITS LISTED ABOVE.

- **For consideration in the AoT permit review process, please incorporate recommendations along with associated materials as detailed, into the final sheet plans as written below (updated highlighted text as applicable) and provide to NHDES and cc NHFG for final review.**
- **For all other permits, please include recommended permit conditions in final plan sheets plans as written below (updated highlighted text as applicable) and provide to NHDES and cc NHFG for final review. Permit reviewers will adopt/include NHFG permit conditions in the permit if approved.**

New Hampshire Fish and Game Wetland and AoT Permit Conditions (Env-Wq 1503.33) – Wildlife Protection Notes:

14. Blanding's turtle (State endangered), Northern Black Racer (State threatened), and Spotted Turtle (State threatened) occur within the vicinity of the project area. All operators and personnel working on or entering the site shall be made aware of the potential presence of these species and shall be provided flyers that help to identify these species, along with NHFG contact information.
15. Rare species information (e.g. identification, observation and reporting of observations, when to contact NHFG immediately and NHFG contact information) shall be communicated during morning tailgate meetings prior to work commencement during the construction phase of the project. See Plan Sheet xxxxxx. Include attached flyers to plan sheet set.
16. Observations of Northern Black Racers in the months of April-May and September-October may indicate the potential for a den site on or near the project site. Observations of this species during this timeframe shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Environmental Review Program. Please contact Melissa Winters (603-479-1129) or Brendan Clifford (603-944-0885). Observations of this species outside of this timeframe can follow general reporting guidance. Please include photograph with text if feasible.
17. Turtles may be attracted to disturbed ground during nesting season (May 15th – June 30th). All turtle species nests are protected by NH laws. If a nest is observed or suspected, operators shall contact Melissa Winters (603-479-1129) or Josh Megyesy (978-578-0802) at NHFG immediately for further consultation.
18. No sumps shall be included in the design of catch basins or outlet control structures when located near or within grassy areas to avoid the entrapment of rare wildlife species.

19. Outlet control structures in storm water treatment areas shall not be placed adjacent to the side slopes but rather as far away as possible to deter wildlife crawling onto them and falling through the grate openings. These structures shall be a minimum 12”-18” above grade. See Plan sheet(s) dated XXXXXX for specs.
20. A native pollinator seed mix shall be used, if necessary, to restore disturbed areas. Seed mixes shall be low-growing species in order to minimize the need for mowing.
21. Fertilizer shall not be used within 100 feet of wetlands. If fertilizer is required for restoration efforts, a low-phosphorous fertilizer shall be used.
22. All manufactured erosion and sediment control products, with the exception of turf reinforcement mats, utilized for, but not limited to, slope protection, runoff diversion, slope interruption, perimeter control, inlet protection, check dams, and sediment traps shall not contain plastic, or multifilament or monofilament polypropylene netting or mesh with an opening size of greater than 1/8 inches.
23. All observations of threatened or endangered species on the project site shall be reported immediately to the NHFG nongame and endangered wildlife environmental review program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov, with the email subject line containing the NHB DataCheck tool results letter assigned number, the project name, and the term Wildlife Species Observation.
24. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHFG in digital format at the above email address for verification, as feasible.
25. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHFG and implementation of corrective actions recommended by NHFG.
26. NHFG, including its employees and authorized agents, shall have access to the property during the term of the permit.

Additional Recommendations:

2. Wood turtles (State species of special concern) occur within the vicinity of the project area. Site operators should be informed of the potential presence of this species and should be provided flyers that help to identify this species along with NHFG contact information should they be encountered during project activities.

NHFG has completed our review of materials submitted for consultation under FIS 1004. No further coordination with NHFG is requested, and the final recommendations have been transmitted to the applicable permitting agency. Questions or concerns on NHFG recommendations must follow FIS 1004.12. Note that NHFG recommendations may be withdrawn pursuant to FIS 1004.

Kevin Newton
Wildlife Biologist
NH Fish and Game Department
Wildlife Division
11 Hazen Drive, Concord NH 03301
Phone: 603-271- 5860

New Hampshire Fish and Game requirements for environmental review consultation can be found at: https://gencourt.state.nh.us/rules/state_agencies/fis1000.html. ALL requests for consultation and submittals should be sent via email to NHFGreview@wildlife.nh.gov or can be sent hardcopy by mail. **The NHB datacheck results letter number needs to be included in the email subject line to read as “NHB*xx-xxxx_Project Name*_FIS 1004 Consultation Submittal”.**

The requirements for consultation (Fis 1004) shall not apply to the following: statutory permit by notification, permit by rule, permit by notification, routine roadway registration, docking structure registration, or conditional authorization by rule. Review requests for these projects or other project types should be submitted to NHFGreview@wildlife.nh.gov or can be sent hardcopy by mail – email or mail subject line for these review requests should read **“NHBxx-xxxx_Project Name_ Env. Review Request”.**

Please provide shapefiles/KMZ/KMLs of the project site (and relevant features if applicable) with your submittal. Review statements provided in the NHB Datacheck Results letter for additional guidance.

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: October 20, 2021
Consultation Code: 05E1NE00-2022-SLI-0254
Event Code: 05E1NE00-2022-E-00817
Project Name: Plaistow-Kingston

Subject: List of threatened and endangered species that may occur in your proposed project location 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: 05E1NE00-2022-SLI-0254
Event Code: Some(05E1NE00-2022-E-00817)
Project Name: Plaistow-Kingston
Project Type: TRANSPORTATION
Project Description: NHDOT proposed to reconstruct 1.8 miles of existing roadway and includes intersection work, drainage work, and the addition of water quality BMPs within the corridor.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.8686038,-71.08840590602648,14z

Counties: Rockingham County, New Hampshire

Endangered Species Act Species

There is a total of 2 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

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

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

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: August 19, 2022
Project code: 2022-0072362
Project Name: Plaistow-Kingston (NHDOT 10044-E)

Subject: Concurrence verification letter for the 'Plaistow-Kingston (NHDOT 10044-E)' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated August 19, 2022 to verify that the **Plaistow-Kingston (NHDOT 10044-E)** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

Project Description

The following project name and description was collected in IPaC as part of the endangered species review process.

Name

Plaistow-Kingston (NHDOT 10044-E)

Description

The proposed project involves the reconstruction and widening of approximately 1.8 miles of Route 125 in the Towns of Plaistow and Kingston, New Hampshire. The project is still in the design phase and proposed alternatives and impacts are still being determined.

Determination Key Result

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

Qualification Interview

1. Is the project within the range of the Indiana bat[1]?

   [1] See Indiana bat species profile

   Automatically answered
   No

2. Is the project within the range of the Northern long-eared bat[1]?

   [1] See Northern long-eared bat species profile

   Automatically answered
   Yes

3. Which Federal Agency is the lead for the action?

   A) Federal Highway Administration (FHWA)

4. Are *all* project activities limited to non-construction[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

   [1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

   No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces[1]?

   [1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

   Yes

6. Are *all* project activities **greater than** 300 feet from existing road/rail surfaces[1]?

   [1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

   No

7. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum[1]?

   [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

   No

8. Is the project located **within** a karst area?

   No

9. Is there *any* suitable[1] summer habitat for Indiana Bat or NLEB **within** the project action area[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   [2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat.

   Yes

10. Will the project remove *any* suitable summer habitat[1] and/or remove/trim any existing trees **within** suitable summer habitat?

    [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

    Yes

11. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

    No

12. Have presence/probable absence (P/A) summer surveys[1][2] been conducted[3][4] **within** the suitable habitat located within your project action area?

    [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

    [2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    [3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

    [4] Negative presence/probable absence survey results obtained using the summer survey guidance are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

    Yes

    SUBMITTED DOCUMENTS

    - *10044E Bat Acoustic Survey Report 8-4-22 FINAL.pdf https://ipac.ecosphere.fws.gov/project/R5PBHQE7DBCQ3I3ENG6YKXSMKE/projectDocuments/115810009*

13. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB[1]?

    [1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    No

14. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum[1]?

    [1] Contact the local Service Field Office for appropriate distance from hibernacula.

    No

15. Does the project include activities **within documented NLEB habitat**[1][2]?

    [1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

    [2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

    No

16. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

    Yes

17. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

    C) During both the active and inactive seasons

18. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

    Yes

19. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

    Yes

20. Will *any* tree trimming or removal occur **greater than** 300 feet from existing road/rail surfaces?

    Yes

21. Are *all* trees that are being removed clearly demarcated?

    Yes

22. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

    No

23. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

    Yes

24. Does the project include maintenance of the surrounding landscape at existing facilities (e.g., rest areas, stormwater detention basins)?

    No

25. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

    No

26. Does the project include slash pile burning?

    No

27. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

    No

28. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

    Yes

29. Is there *any* suitable habitat[1] for Indiana bat or NLEB **within** 1,000 feet of the structure? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

    [1] See the Service's current summer survey guidance for our current definitions of suitable habitat.

    Yes

30. Has a structure assessment[1] been conducted **within** the last 24 months[2] to determine if bats are using the structure(s)?

    [1] Structure assessment for occupied buildings means a cursory inspection for bat use. For abandoned buildings a more thorough evaluation is required (See User Guide Appendix D for bridge/abandoned structure assessment guidance).

    [2] Assessments must be completed no more than 2 years prior to conducting any work on the structures, regardless of whether assessments have been conducted in the past. Due to the transitory nature of bat use, a negative result in one year does not guarantee that bats will not use that structure in subsequent years.

    No

31. Is the structure **within** a known maternity colony's home range[1]?

    [1] A structure assessment is required for structure projects that are within the home range of a known maternity colony. Contact your local FWS office for more information if you are uncertain about where the nearest known maternity colony is located.

    No

32. Have presence/probable absence (P/A) summer surveys[1][2] been conducted for this project with *at least one* survey point **within** suitable habitat and within 0.25 miles of the structure(s)[3][4]?

    [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

    [2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if seasonal restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    [3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

    [4] Negative presence/probable absence survey results obtained using the summer survey guidance are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

    Yes

    SUBMITTED DOCUMENTS

    - *10044E Bat Acoustic Survey Report 8-4-22 FINAL.pdf https://ipac.ecosphere.fws.gov/project/R5PBHQE7DBCQ3I3ENG6YKXSMKE/projectDocuments/115810009*

33. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB[1]?

    [1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    No

34. Did the local Service Field Office verify[1] that this P/A survey can be used for determining Indiana bat and/or NLEB absence from the structure(s)?

    [1] Coordination with local US Fish and Wildlife Service Field Office regarding the applicability of P/A surveys for this use is required.

    Yes, I verified with the local FWS office that the P/A surveys are adequate for determining abscence of bats from the stucture(s) in this project

35. Will the structure removal, replacement, and/or maintenance activities include installing new or replacing existing **permanent** lighting?

    No

36. Will the project involve the use of **temporary** lighting *during* the active season?

    Yes

37. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting will be used?

    Yes

38. Will the project install *any* new or replace any existing **permanent** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities?

    Yes

39. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **permanent** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be installed or replaced?

    Yes

40. Does the project include percussives or other activities (**not including tree removal/ trimming or bridge/structure work**) that will increase noise levels above existing traffic/ background levels?

    No

41. Are *all* of the project activities that will be conducted **greater than** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum[1] and **greater than** 300 feet from the existing road/rail surface[2] limited to one or more of the following activities:

    - maintenance of the surrounding landscape at existing facilities (e.g., rest areas, stormwater detention basins);
    - wetland or stream protection activities associated with compensatory wetland/stream mitigation that will not clear suitable habitat (i.e. tree removal/trimming);
    - involves slash pile burning;
    - within an area with negative presence/probable absence (P/A) summer surveys[3];
    - limited to activities that **DO NOT** cause any stressors to the bat species, including, but not limited to those described in the BA/BO (i.e. do not involve habitat removal, tree removal/trimming, bridge or structure activities, temporary or permanent lighting, or use of percussives) (e.g., lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.))?

    [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

    [2] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.
    (example activities include road line painting)

    [3] See the Service's summer survey guidance for our current definitions of suitable habitat.

    Yes, all of the project activities that are greater than 0.5 miles from a hibernaculum and greater than 300' from the road/rail surface are limited to one or more of these activities

42. Are *all* project activities that are **not associated with** habitat removal, tree removal/ trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

    Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

    Yes

43. Will the project raise the road profile **above the tree canopy**?

    No

44. Are the project activities that are not associated with habitat removal, tree removal/ trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives consistent with a No Effect determination in this key?

    Automatically answered
    Yes, other project activities are limited to actions that DO NOT cause any additional stressors to the bat species as described in the BA/BO

45. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

    Automatically answered
    Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.

46. Is the structure removal, replacement, or maintenance activities portion of this project consistent with a No Effect determination in this key?

    Automatically answered
    Yes, because the structure has been assessed using the criteria documented in the BA and no signs of bats were detected

47. **General AMM 1**
    Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

    Yes

Project Questionnaire

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

   N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

   N/A

3. How many acres[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

   [1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

   6.0

4. How many acres[1] of trees are proposed for removal between 100-300 feet of the existing road/rail surface?

   [1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

   0.6

5. Please describe the proposed structure work:

   The required demolition of two residences impacted by the proposed widening of NH Route 125.

6. Please state the timing of all proposed structure work:

   Estimated to occur in September 2024 through October 2024 time frame.

Avoidance And Minimization Measures (AMMs)

This determination key result includes the committment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat

This key was last updated in IPaC on April 28, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects. The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPaC User Contact Information

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10267

New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

PLAISTOW-KINGSTON
X-A000(378)
10044E

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

No Historic Properties Affected Memo

In order to assist the Federal Highway Administration (FHWA) in complying with Section 106 of the National Historic Preservation Act of 1966 and its amendments, The New Hampshire Department of Transportation (NHDOT), in consultation with the New Hampshire Division of Historical Resources (SHPO), has reviewed this undertaking according to the standards and procedures detailed in the 2018 Programmatic Agreement regarding the Federal-Aid Highway Program in New Hampshire.

Project Description

The intent of this project is to improve the safety and capacity of NH Route 125 related to existing access density and increasing traffic volumes. The project begins on NH Route 125, approximately 400ft north of Old County Road in Plaistow, extending 1.8 miles north to approximately 500ft south of Newton Junction/Hunt Road in Kingston. Improvements to side roads are anticipated at Kingston Road, Granite Road, Diamond Oaks Boulevard, Colonial Road, Dorre Road and Happy Hollow Lane. Improvements include 8,900 feet of widening with pavement removal, shimming and repaving within the existing roadway typical. Side road reconstruction to address mainline profile changes and geometric improvements, including minor consolidation/realignment with the elimination of two access points. The proposed roadway will be 3 lanes wide with a dedicated center turn lane. Drainage upgrades and stormwater treatment included, as well as other ancillary work.

Identification

Above-Ground

Elden-Mathews Cottage, 56 Route 125, Kingston (KIN0110) is eligible under Criterion A as one of the only survivors from a significant period of camp and cabin construction in wooded and rural South Kingston. It is also eligible under Criterion C due to its high historic integrity.

The following resources were found not eligible:

- KIN0019 – Happy Hollow Cemetery, Kingston
- KIN0027 – 49 Route 125, Kingston
- KIN0107 – 5 Route 125, Kingston
- KIN0108 – 44 Route 125, Kingston
- KIN0111 – 58 Route 125, Kingston
- KIN0112 – Culvert at Little River, Route 125
- PLI1016 – 195 Plaistow Rd, Plaistow
- PLI0107 – 93 Kingston Rd, Plaistow

A stonewall located along Diamond Oaks Boulevard was identified as eligible for reconstruction. Impacts to stonewalls will follow NHDOT's Stonewall Policy.

Archaeology

Updated surveys to confirm areas of previously identified archaeological sensitivity sites by the Little River and at location for proposed water quality BMP site were completed. Phase II archeological testing of the previously

identified archaeological sites and the Phase IA/IB determined that no further archeological surveys will be required. Slope work within 25 feet of the Happy Hollow Cemetery will require monitoring during construction by a qualified archaeologist.

Public Consultation

Public Information meetings were held on 10/17/2019 and 10/29/2020. One interested property owner within the project area reached out to FHWA regarding Consulting Party status, however never asked to become one.

NHDHR was contacted via Request for Project Review in November 2018. Meetings with NHDHR occurred in February, July and August of 2020.

Determination of Effect

Elden-Mathews Cottage, 56 Route 125, Kingston (KIN0110): The proposed project will require the creation of a wet extended detention pond (BMP), to provide treatment of stormwater on the adjacent property to the northeast owned by NHDOT. However, the project will have no direct impacts to the property and a tree buffer of approximately 70-80 feet will remain between the proposed BMP and the cottage. Therefore, there will be no effect on this historic property.

Happy Hollow Cemetery, KIN0019: Although the Happy Hallow Cemetery is not individually eligible, any excavation within 25' of the cemetery will be monitored during construction, per NHRSA 289:3.

Based on a review pursuant to 36 CFR 800.4, NHDOT has determined that no historic or archaeological resources are affected in the project area and that no further survey work is needed.

The result of identification and evaluation for the proposed contract is a finding of **No Historic Properties Affected**.

Section 4(f) *(to be completed by FHWA)*	*There Will Be:*	☒ **No 4(f);**	☐ **Programmatic 4(f);**	☐ **Full 4 (f);** or
	☐ **A finding of *de minimis* 4(f) impact as stated:** In addition, with NHDHR concurrence of no adverse effect for the above undertaking, and in accordance with 23 CFR 774.3, FHWA intends to, and by signature below, does make a finding of *de minimis* impact. NHDHR's signature represents concurrence with both the no adverse effect determination and the *de minimis* findings. Parties to the Section 106 process have been consulted and their concerns have been taken into account. Therefore, the requirements of Section 4(f) have been satisfied.			

In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

Jill L Edelmann

11/6/2020

Jill Edelmann
Cultural Resources Manager

Date

Concurred with by the NH State Historic Preservation Officer:

Nadine Miller
Deputy State Historic Preservation Officer
NH Division of Historical Resources

11/10/2020

Date

US Army Corps of Engineers®
New England District

Appendix B
New Hampshire General Permits
Required Information and USACE Section 404Checklist

USACE Section 404 Checklist

1. Attach any explanations to this checklist. Lack of information could delay a USACE 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 3 for information on single and complete projects.
4. Contact USACE at (978) 318-8832 with any questions.
5. The information requested below is generally required in the NHDES Wetland Application. See page 61 for NHDES references and Admin Rules as they relate to the information below.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See the following to determine if there is an impaired water in the vicinity of your work area. * https://nhdes-surface-water-quality-assessment-site-nhdes.hub.arcgis.com/ https://www.des.nh.gov/water/rivers-and-lakes/water-quality-assessment https://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx	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 tidal SAS, prime wetlands, or priority resource areas? 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://www4.des.state.nh.us/NHB-DataCheck/.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?		N/A*
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?	15,413 SF	
2.8 What % of the overall project sire will be previously and proposed filled wetlands?	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://www4.des.state.nh.us/NHB-DataCheck/. USFWS IPAC website: https://ipac.ecosphere.fws.gov/	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: https://wildlife.state.nh.us/wildlife/wap-high-rank.html. • 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 31?		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 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 37 GC 14(d) of the GP document**	X	
6. Minimal Impact Determination (for projects that exceed 1 acre of permanent impact)	Yes	No
Projects with greater than 1 acre of permanent impact must include the following: • Functional assessment for aquatic resources in the project area. • On and off-site alternative analysis. • Provide additional information and description for how the below criteria are met.	N/A- Project has less than 1 acre of permanent wetland impact	
6.1 Will there be complete loss of aquatic resources on site?		
6.2 Have the impacts to the aquatic resources been avoided and minimized to the greatest extent practicable?		
6.3 Will all aquatic resource function be lost?		
6.4 Does the aquatic resource (s) have regional significance (watershed or ecoregion)?		
6.5 Is there an on-site alternative with less impact?		
6.6 Is there an off-site alternative with less impact?		
6.7 Will there be a loss to a resource dependent species?		
6.8 Are indirect impacts greater than 1 acre within and adjacent to the project area?		
6.9 Does the proposed mitigation replace aquatic resource function for direct, indirect, and cumulative impacts?		

*Although this checklist utilizes state information, its submittal to USACE is a federal requirement.

** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

USACE Appendix B – Supplemental Information

1.1 – The following impaired waters are located within 1 mile of the project area:

Assessment Unit ID	Waterbody Name	Impairments
NHRIV700061401-04	Kelly Brook – Seaver Brook	Benthic-Macroinvertebrate Bioassessments Dissolved oxygen saturation Dissolved oxygen concentration pH E. coli (TMDL No. 39272)
NHLAK700061403-03-01	Country Pond*	pH Cyanobacteria hepatotoxic microcystins PCBs - Fish Consumption Advisory (TMDL No. 40279)
NHRIV700061403-05	Bartlett Brook – Colby Brook – Unnamed Brook*	Dissolved oxygen saturation Dissolved oxygen concentration pH

*Waterbodies are located within 1 mile of project area, but their watersheds are not within the project limits.

2.3 – The project involves extension of the existing culvert that carries the Little River under NH Route 125. No new wetland or stream crossings are proposed.

2.4 – The project involves a small amount of clearing (approximately 4,000 sq. ft.) along the Little River, adjacent to NH Route 125.

3.1 – The NHB review showed reports of Blanding's Turtle (state endangered), Northern Black Racer (state threatened), spotted turtle (state threatened), and wood turtle (state special concern) near the project area. The USFWS IPaC report indicated that the northern long-eared bat and monarch butterfly may be present within the vicinity of the project area.

3.2 – Work will occur at the edges of areas mapped as "Supporting Landscape". There is an area of "Highest Ranked Habitat in Region" outside of the project area to the northwest surrounding Bayberry Pond.

3.5 – No new stream crossings are proposed. The project involves a 3-foot extension of the existing culvert that carries the Little River under NH Route 125.

PLAISTOW-KINGSTON
X-A000(387)
10044-E

WETLAND DELINEATION REPORT
for
NH Route 125 Roadway Improvement Project

Prepared For:
NH Department of Transportation
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Prepared By:
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AUGUST 2020
REVISED NOVEMBER 2022

PLAISTOW-KINGSTON
X-A000(387)
10044-E

NH Route 125 Roadway Improvement Project
Final Wetland Delineation Reports

WETLAND DELINEATION REPORT including POTENTIAL STORMWATER BMP AREAS B, C, & E – MCFARLAND-JOHNSON, INC., JULY AND AUGUST 2018, REVISED DECEMBER 2021

WETLAND DELINEATION REPORT FOR POTENTIAL STORMWATER BMP AREAS A, D, D1, F, & G – GM2 ASSOCIATES, INC., OCTOBER 2019, JUNE 2020, AND OCTOBER 2022, REVISED NOVEMBER 2022

PLAISTOW-KINGSTON 10044-E
NH ROUTE 125
ROADWAY IMPROVEMENT PROJECT

JULY AND AUGUST 2018

FINAL
WETLAND DELINEATION REPORT
for
NH ROUTE 125 Roadway Improvement Project
Including
POTENTIAL STORMWATER BMP AREAS B, C, & E

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Plaistow-Kingston
10044-E

August 2020

Revised December 2021

July and August 2018
Wetland Delineation Report
NH Route 125 Roadway Improvement Project
Plaistow-Kingston 10044-E

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Appendices

INTRODUCTION

This report describes the results of a wetland delineation completed along NH Route 125 in Kingston and Plaistow, Rockingham County, NH. McFarland Johnson (MJ) completed this work on behalf of the NH Department of Transportation (NHDOT) for the proposed roadway improvement project. Stephen Hoffman was the lead delineator, with assistance from Jordan Tate. Oversight on all matters was provided by Christine Perron, NH Certified Wetland Scientist No. 294. The project is located on NH Route 125 beginning just north of Old Country Road in Plaistow and ending approximately 1.7 miles north at a point just south of Newton Junction Road in Kingston (Figure 1). The field study area encompassed the limits of available survey within the project limits.

This report also summarizes additional resources that were considered while reviewing the project area, including stream habitat, potential vernal pools, and invasive plant populations.

Figure 1. Approximate Project Area

METHODOLOGY

Field work was carried out during the months of June, July and August 2018. According to the US Drought Monitor, Rockingham County was abnormally dry in late June into the beginning of July, with normal conditions returning in August.

Field work was completed from south to north on the east side of NH Route 125 and north to south on the west side. 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*. References included *Field Indicators of Hydric Soils in the United States* (Version 7.0, 2010), 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).

The ordinary high water (OHW) of the Little River was delineated based on hydrologic, topographic, and vegetative characteristics. The marking systems used for this 2018 wetland delineation matches the marking system used for the 2001 wetland delineation (done by others). The location of the wetland boundaries, OHW, and TOB were survey-located by GM2. The approximate limits of invasive plant populations were located using a Trimble Geo 7 GPS unit with sub-meter accuracy.

Data on wetland vegetation, soils, hydrology, and other characteristics were collected. Photographs of wetlands, streams, and structures were taken. MJ documented the delineation with Army Corps Wetland Determination Data Forms at each wetland location.

Additional wetland delineation has been conducted by GM2 for the areas of potential stormwater BMPs identified as Areas A, D, D1, F and G. Refer to the July 2020 GM2 Wetland Report and mapping for these five potential BMP locations.

WETLAND DELINEATION

Landscape Setting

NH Route 125 travels from Plaistow north through Kingston, continuing to just north of Milton, NH where it merges with NH Route 16. This route is classified as a Rural Principal Arterial. The project area is on undulating terrain at an approximate elevation of 50' above sea level. In general, the NH Route 125 corridor, through much of the project area is characterized by a landscape that is fragmented by State and local roads and commercial and residential development. Much of the corridor is developed as commercial uses throughout, with residential development concentrated around Colonial Road. The majority of the NH Route 125 corridor in Plaistow and Kingston through the project area is zoned Commercial, with portions in Plaistow zoned Industrial, and portions in Kingston, near Colonial Road, zoned Single Family Residential.

Soils in the project area consist of a variety of soil types. The most prevalent soils include Canton fine sandy loam, very stony, 0-8% slopes (43B), 8-15% slopes (43C), 15-25% (43D); Windsor loam sand, 0-3% slopes (26A); Chatfield-Hollis-Canton complex, very stony, 8-15% slopes (140C), 15-35% slopes (140D); and Udorthents. The underlying bedrock is mapped as Berwick Formation, Eliot Formation, and Eliot Formation Calef Member. Wetlands occur throughout the project area, with many extending beyond the study limits. A description of each delineated area follows.

Description of Wetlands and Streams

A brief summary of delineated wetlands and surface waters is below, starting from the south end of the project and continuing north. Only the wetland and surface water boundaries located within the study area were field delineated. Following the delineation, aerial imagery and National Wetland Inventory (NWI) mapping were utilized to help determine where hydrologic connections exist beyond the study area. The descriptions below note when delineated wetland areas are part of a single wetland system.

Two stream crossings were identified in the project area. Both crossings occur over the Little River and are described below. A stream assessment of the two crossing is enclosed in in Appendix D.

An assessment of functions and values was completed for each wetland system using the Army Corps *Highway Methodology Workbook Supplement.* Principal functions and values are summarized below. Wetland Function-Value Evaluation Forms are enclosed in Appendix E.

Locations of wetlands and the Little River are shown in the figures below, as well as on the existing conditions plans enclosed in Appendix B.

Area DB1
Delineated feature(s): none
Classification: Non-wetland

Description: Area DB1 was identified during the 2001 wetland delineation effort (done by others) as a palustrine shrub-scrub (PSS) wetland (shown below in Figure 2). Area DB1 is located on the east side of Route 125 approximately 1,000 feet north of Old Country Road. During the 2018 wetland delineation effort, it was determined that DB1 has been modified since 2001, and no longer retained the characteristics necessary to be classified as a wetland. The area appears to have been disturbed for the construction of a stormwater treatment area as evident by the concrete stormwater riser seen in photos 1 and 2. Vegetation in this area was dominated by grass-leaved goldenrod (*Euthamia graminifolia*), broom sedge (*Carex scoparia*), and birdsfoot trefoil (*Lotus corniculatus*). Soils in this area did not exhibit any hydric soil indicators and there were no primary indicators of hydrology.

Photo 1. Area DB1: June 28, 2018

Photo 2. Area DB1: June 28, 2018

Figure 2. 2001 Wetlands: DB1

Area BBB
Delineated feature(s): palustrine wetland
Classification: PEM1C

Description: Wetland BBB is a depressional palustrine emergent wetland located on the west side of Route 125 located approximately 1,175 feet north of Old Country Road. The vegetation consists primarily of purple loosestrife (*Lythrum salicaria*), swamp dewberry (R*ubus hispidus*), broom sedge, and Phragmites. The portion of the wetland located within the study area is approximately 0.05 acres. The wetland extends beyond the study limits of the area.

Functions & Values: Given the wetland's proximity to the road and the presence of multiple invasive species, there are limited functions and values. The proximity to the road and its potential sources of sediment and pollutants, along with dense vegetative cover, make this wetland suitable for sediment/toxicant retention and flood flow alteration.

Photo 3. Area BBB: August 8, 2018

Photo 4. Area BBB: August 8, 2018

Figure 3. Wetlands BBB & DA

Area DA

Delineated feature(s): palustrine wetland

Classification: PFO1E

Description: Area DA is a depressional palustrine forested wetland located behind an auto body shop at 216 Plaistow Road. The vegetation consisted primarily of red maple (*Acer rubrum*), common winterberry (*Ilex verticillate*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmundastrum cinnamomeum*), and oriental bittersweet (*Celastrus orbiculatus*). Surface water was observed during the delineation. The portion of the wetland located within the study area is approximately 0.06 acres. The wetland extends beyond the study area limits.

Functions & Values: Given the proximity to the road, urban surrounding, and relative abundance of impervious surfaces within the watershed, this wetland is suitable for flood flow alteration, sediment/toxicant retention, and nutrient removal.

Photo 5. Area DA: August 8, 2018

Photo 6. Area DA: August 8, 2018

Figure 4. Wetlands BBB & DA

Area AAA
Delineated Features: palustrine wetland
Classification: PFO1E

Description: Area AAA is a depressional palustrine forested wetland located on the west side of Route 125, approximately 450 feet south of the intersection of Route 125 and Kingston Road. The wetland portion within the study area consists of red maple, red oak (*Quercus rubra*), white oak (*Quercus alba*), New York fern (*Thelypteris noveboracensis*), and common winterberry.

Functions & Values: Given the proximity to the road, urban surrounding, and relative abundance of impervious surfaces within the watershed, this wetland is suitable for flood flow alteration, sediment/toxicant retention, and nutrient removal.

Photo 7. Wetland AAA August 8, 2018

Photo 8. Wetland AAA August 8, 2018

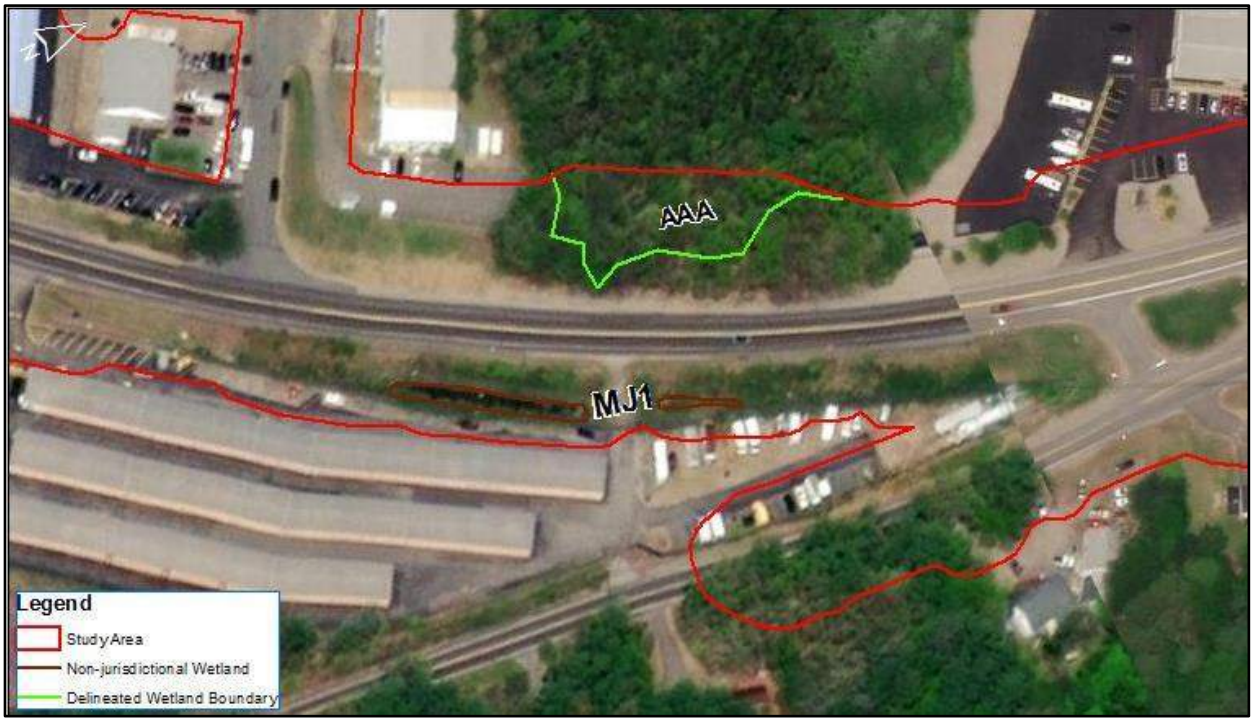


Figure 5. Wetlands AAA and MJ1 (page revised 12.8.21)

Area MJ1

Delineated Features: Excavated palustrine swale (Non-jurisdictional Wetland)
Classification: PEM1C

Description: Area MJ1 is an excavated vegetated stormwater swale (non-jurisdictional) located along the eastern side of Rt. 125, across from wetland AAA, approximately 450 feet south of the intersection of Route 125 and Kingston Road. This non-jurisdictional swale is bordered to the east by a self-storage facility. There is a paved pull-off area that bisects the swale, with a culvert beneath connecting the two portions. The swale consists of emergent vegetation such as swamp candle (*Lysimachia terrestris*), purple loosestrife, silky dogwood (*Cornus amomum*), and broad-leaved cattail (*Typha latifolia*). The swale is located entirely within the study area and is approximately 0.06 acres.

Functions & Values: Based on the proximity to the road, urban surroundings with relatively abundance of impervious surfaces, and the dense, herbaceous vegetation, the suitable functions and values associated with this swale include flood flow alteration, sediment/toxicant retention, and nutrient removal.

Photo 9. MJ1 June 28, 2018

Photo 10. MJ1 August 8, 2018

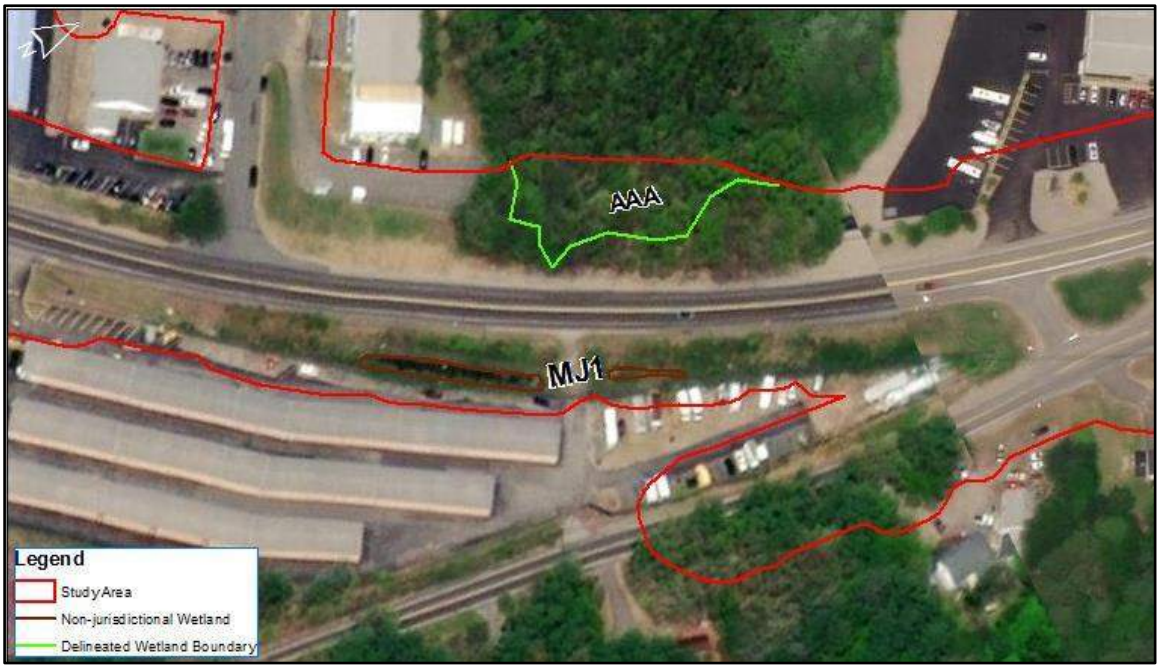


Figure 6. Wetlands AAA and MJ1 (page revised 12.8.21)

Area ZZ
Delineated Features: palustrine wetland
Classification: PFO1E

Description: Area ZZ is a palustrine forested wetland located on the west side of Route 125 approximately 100 feet north of the intersection with Kingston Road. The portion of the wetland within the study area is approximately 0.31 acres and is part of a larger forested wetland complex that extends beyond the study area. The wetland area within the study limit is dominated by red maple, northern arrowwood (*Viburnum dentatum*), Canada mayflower (*Maianthemum canadense*), and poison sumac (*Toxicodendron vernix*).

Functions & Values: Given the proximity to the road, urban surrounding, and relative abundance of impervious surfaces within the watershed, this wetland is suitable for flood flow alteration, sediment/toxicant retention, and nutrient removal. This wetland contains wildlife food sources and is contiguous with undeveloped land, and therefore is also suitable for wildlife habitat.

Photo 11. Wetland ZZ August 8, 2018

Photo 12. Wetland ZZ August 8, 2018

Figure 7. Wetlands GR, L & ZZ

Area GR & L
Delineated Features: palustrine wetland
Classification: PFO1E

Description: Area GR is a palustrine emergent wetland located on the eastern side of Granite Road that drains into a culvert the runs under Granite Road and discharges to wetland L. Wetland GR vegetation consists of spotted jewelweed (*Impatiens capensis*), spotted joe-pye weed (*Eutrochium maculatum*), and fringed sedge (*Carex crinite*). Wetland GR extends beyond the study area limits. Wetland L is a depressional palustrine forested wetland located on the western side of Granite Road. Dominant plant species include red maple, northern arrowwood, spotted jewelweed, and field horsetail (*equisetum arvense*). Wetland L is within potential BMP Area B.

Photo 13. 2018 Wetland L

Photo 14. 2018 Wetland GR

Figure 8. Wetlands GR, L & ZZ

Functions & Values: Wetland L is surrounded by asphalt paved roadways, with surrounding commercial and residential development. The suitable functions and values associated with the area of wetland within the study area include flood flow alteration, sediment/toxicant retention, and nutrient removal. The portion of wetland GR located within the study area is negligible.

Area YY
Delineated Features: palustrine wetland
Classification: PEM1C

Description: Wetland YY is a palustrine emergent wetland located along the bank of the Little River, which flows eastward underneath Route 125 approximately 565 feet north of Granite Road. The vegetation is dominated by arrow-leaved tearthumb (*Persicaria sagittate*) and royal fern (*Osmunda regalis*). The portion of the wetland located within the study area is approximately 0.11 acres, with the wetland extending beyond the study area limits. Due to the flat topography and flooded wetland conditions at the time of the wetland delineation, flagging the full extent of the OHW line was not possible.

Functions & Values: This wetland is suitable for floodflow alteration, sediment/toxicant retention, nutrient removal, sediment/shoreline stabilization, and wildlife habitat.

Photo 15. Wetland YY August 8, 2018

Photo 16. Wetland YY August 8, 2018

Figure 9. Wetlands YY, M & FR5

Little River
Delineated Features: Perennial Stream
Classification: R2UBH

The Little River is a perennial stream with a Cowardin Classification of R2UBH or a riverine, lower perennial system with an unconsolidated bottom, and a permanently flooded water regime. The substrate of the little river is primarily gravel with cobbles and sand interspersed. At the location of the NH Route 125 crossing the Little River is a 3rd order stream with a watershed size of approximately 3.4 square miles. Based on the NHDES Stream Crossing Rules (Env-Wt 900) the Diamond Oaks Road crossing is classified as Tier 3 stream crossings.

Within the Study Area the Little River has a broad floodplain associated with it. This large floodplain area consists of palustrine wetlands (Wetlands YY, M, FR5). Several of these areas were inundated with water during the wetland delineation. The existing crossing structures appear to be undersized, possibly contributing to this ponding/backwatered condition. Additional information on the Little River including stream crossing assessment data forms and photographs are included in Appendix D – Little River Stream Assessment.

Area M
Delineated Features: palustrine wetland
Classification: PEM1C / PFO1E

Description: Area M consists of a fringing palustrine emergent wetland bordering the Little River transitioning into a palustrine forested wetland, located on the eastern side of Route 125. A culvert allows the Little River to flow from wetland YY under Route 125 to wetland M. A second culvert allows the Little River to flow under an entrance road to wetland FR5. The vegetation is dominated by American Elm (*Ulmus Americana*), red maple, red mulberry (*Morus rubra*), black elderberry (*Sambucus nigra*), northern arrowwood, poison ivy (*Toxicodendron radicans*), and rough goldenrod (*Solidago patula*). Due to the flat topography and flooded wetland conditions at the time of the wetland delineation, flagging the full extent of the OHW line was not possible. Wetland M is approximately 0.65 acres and within potential BMP Area C.

Functions & Values: Given the proximity to the road, urban surrounding, and association with the Little River, this wetland is suitable for flood flow alteration, sediment/toxicant retention, and nutrient removal.

Photo 17. Wetland M August 8, 2018

Photo 18. Wetland M August 8, 2018

Figure 10. Wetlands YY, M & FR5

Area FR5

Delineated Features: palustrine wetland
Classification: PSS1E

Description: Wetland FR5 is located on the eastern side of an entrance road for a golf course, downstream of wetland M. Wetland FR5 consists of a palustrine scrub-shrub wetland along a diffuse section of the Little River. Vegetation consisted of red maple, common winterberry, specked alder (*Alnus incana*), sensitive fern, royal fern, and tussock sedge (*Carex stricta*). Due to the flat topography and flooded wetland conditions at the time of the wetland delineation, flagging the full extent of the Ordinary High Water line was not possible. The portion of the wetland located within the study area is approximately 0.76 acres, with the wetland extending beyond the study area limits.

Functions & Values: This wetland is suitable for floodflow alteration, sediment/toxicant retention, nutrient removal, sediment/shoreline stabilization, and wildlife habitat.

Photo 19. Wetland FR5 August 8, 2018

Photo 20. Wetland FR5 August 8, 2018

Figure 11. Wetlands YY, M & FR5

Area N

Description: Area N was delineated in 2001 as a palustrine emergent wetland. The wetland is outside of the 2018 study area and therefore was not delineated as a part of the EA reevaluation effort.

Area O
Delineated Features: palustrine wetland
Classification: PFO1E

Description: Area O is a depressional palustrine forested wetland located on the eastern side of Colonial Road. Vegetation consists of red maple, common winterberry, tussock sedge (*Carex stricta*), and oriental bittersweet. The delineated area is smaller than what was delineated in 2001. Wetland O extends beyond the study area limits, and is contiguous with larger areas of undeveloped land, including other wetlands. The portion of the wetland within the study area is approximately 0.13 acres.

Functions & Values: Given the proximity to the road, urban surrounding, and relative abundance of impervious surfaces within the watershed, this wetland is suitable for sediment/toxicant retention and nutrient removal. This wetland contains wildlife food sources and is contiguous with undeveloped land, and therefore is also suitable for wildlife habitat.

Photo 21. Wetland O August 8, 2018

Photo 22. Wetland O August 8, 2018

Figure 12. Wetlands O & XX

Area XX
Delineated Features: palustrine wetland
Classification: PFO1E

Description: Area XX is a depressional palustrine forested wetland located on the western side of Route 125, across from the southern intersection with Colonial Road. The wetland is located entirely within the study area and is approximately 0.06 acres. Dominant vegetation consists of red maple, black birch (*Betula lenta*), and common winterberry.

Functions & Values: Given the proximity to the road and the relatively small size of the wetland, suitable functions and values are limited to flood flow alteration and sediment/toxicant retention.

Photo 23. Wetland XX August 8, 2018

Photo 24. Wetland XX August 8, 2018

Figure 13. Wetlands O & XX

Area ISO1
Delineated Features: palustrine wetland
Classification: PFO1E

Description: Area ISO1 is an isolated depressional palustrine forested wetland located on the western side of Colonial Road. Vegetation consists of red maple, sweet birch (*Betula lenta*), green ash, witch hazel (*Hamamelis virginiana*), and marsh fern (*Thelypteris palustris*). The wetland is located entirely within the study area and is approximately 0.02 acres and is located within potential BMP area E.

Functions & Values: Given the wetland's proximity to the road, and isolation from other wetlands, there are limited functions and values. This wetland is suitable for flood flow alteration, sediment/toxicant retention, and nutrient removal.

Photo 25: Wetland ISO1 August 8, 2018

Photo 26: Wetland ISO1 August 8, 2018

Figure 14. Wetland ISO1

Area P

Delineated Features: palustrine wetland

Classification: PFO1E

Description: Area P is a depressional palustrine forested wetland located on the eastern side of Route 125 approximately 350 feet north of the intersection with Debra Road. A culvert in the northern portion of the wetland runs under Route 125, discharging to wetland WW. Dominant vegetation includes red maple, common winterberry, highbush blueberry, and royal fern. The portion of the wetland within the study area is approximately 0.1 acres, with the wetland extending beyond the study area.

Functions & Values: Given the proximity to the road, urban surrounding, and relative abundance of impervious surfaces within the watershed, this wetland is suitable for flood flow alteration, sediment/toxicant retention, and nutrient removal. This wetland contains wildlife food sources and is contiguous with undeveloped land, and therefore is also suitable for wildlife habitat.

Photo 27: Wetland P August 8, 2018

Photo 28: Wetland P August 8, 2018

Figure 15. Wetlands P, WW & Q

Area Q
Delineated Features: palustrine wetland
Classification: PFO1E / PSS1E

Description: Area Q is a depressional palustrine shrub scrub and partially forested wetland located on the eastern side of Route 125, at the northern extent of the study area, approximately 470 feet north of Wetland P. The portion of the wetland within the study area is approximately 0.16 acres, with the wetland extending beyond the study area limits. Dominant vegetation consisted of shrubs including witch hazel, red maple, and black gum, with herbaceous species such as cinnamon fern and jewel weed.

Functions & Values: Given the proximity to the road, urban surrounding, and relative abundance of impervious surfaces within the watershed, this wetland is suitable for flood flow alteration, sediment/toxicant retention, and nutrient removal.

Photo 29: Wetland Q August 8, 2018

Photo 30: Wetland Q August 8, 2018

Figure 16. Wetlands P, WW & Q

Area WW
Delineated Features: Palustrine wetland
Classification: PFO1E

Description: Wetland WW is a depressional wetland gently sloping towards the west, located on the western side of Route 125 approximately 560 feet north of Debra Drive. A culvert discharges into wetland WW from wetland P. The portion of the wetland located within the study area is approximately 0.01 acres, with the wetland extending beyond the limits of the study area. Dominant vegetation included black birch, red maple, red mulberry, creeping buttercup, and spotted jewel weed.

Functions & Values: This wetland is suitable for sediment/toxicant retention.

Photo 31: Wetland WW August 8, 2018

Photo 32: Wetland WW August 8, 2018

Figure 17. Wetlands P, WW & Q

Vernal Pools and Invasive Plants

Based upon field review during June, July, and August 2018 there were no areas identified within the study area that exhibited the vernal pool characteristics (including landform, hydrology, or indicator species). It was determined that some of the forested wetlands areas have the potential to function as amphibian breeding habitat but were not identified as potential vernal pools.

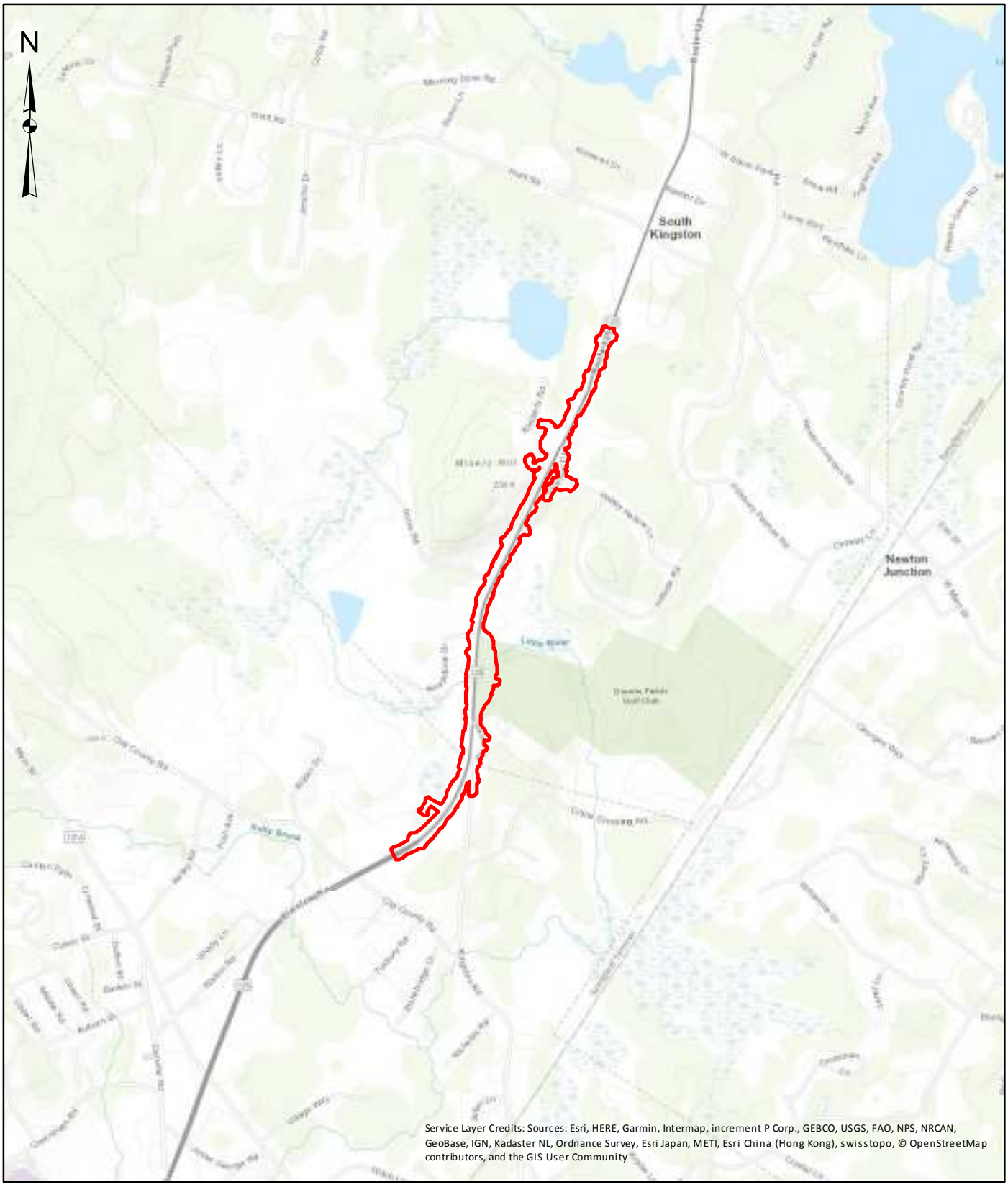
An invasive plant is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm. Under the statutory authority of NH RSA 430:55 and NH RSA 487:16-a, the NH Department of Agriculture, Markets & Food and NHDES prohibit the spread of invasive plants listed on the NH Prohibited Species List (AGR PART 3802.01). The project area contains invasive plants on the Prohibited Species List (see Table 1 below). Locations of these plants are shown on the Invasive Plants Location Map (Appendix F).

NHDOT Standard Specifications designate invasive plants as Type I or Type II based on the complexity of control measures that are required to prevent the spread of the plants during construction. In general, Type II plants require a greater level of control due largely to their ability to spread from stem or root fragments. The control type for each species identified in the project area is included in Table 1.

Common Name	Latin Name	NHDOT Control Type
Bush honeysuckle	*Lonicera* sp.	Type I
Purple loosestrife	*Lythrum salicaria*	Type II
Glossy buckthorn	*Rhamnus frangula*	Type I
Japanese barberry	*Berberis thunbergii*	Type I
Oriental bittersweet	*Celastrus orbiculatus*	Type I
Japanese knotweed	*Polygonum cuspidatum*	Type II
Multiflora rose	*Rosa multiflora*	Type I

Table 1. Prohibited invasive species identified in the project area

APPENDIX A – LOCATION MAP



0 2,000 4,000
Feet

PLAISTOW-KINGSTON 10044E
NH DEPARTMENT OF TRANSPORTATION

Location Map

SCALE :	DATE :	FIGURE :
AS SHOWN	JANUARY 2019	Appendix A

McFarland Johnson

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APPENDIX B – DELINEATED AND NWI WETLANDS

BMP Area A
(see GM2 Report)

Plaistow Rd

BBB

DA

NOTE: NHD Line is inaccurate,
no stream delineated at this location

PLAISTOW

KINGSTON

Little River

Roadstone Dr

Dorre Rd

N

YY

AAA

ZZ

Text

NH Route 125

M

BMP Area C

FR5

Granite Rd

L

MJ1

Non-jurisdictional swale

Kingston Rd

GR

BMP Area B

BMP Area D1
(see GM2 Report)

Match Below

BMP Area D
(see GM2 Report)

Match Above

XX

O

Kimberly Rd

Debra Rd

BMP Area F
(see GM2 Report)

BMP Area G
(see GM2 Report)

Hunt Rd

WW

ISO1

Colonial Rd

BMP Area E

P

Q

NH Route 125

Happy Hollow Ln

Hillside Rd

Newton Junction Rd

Study Area

Potential Stormwater BMP Location

Town Boundary

Rivers and Streams (NHD Lines)

NWI Wetlands

Delineated Wetlands

Delineated Ordinary High Water

Delineated Top of Bank

Notes:

Wetland delineation completed by McFarland-Johnson, Inc. in June/July 2018.

MJ delineation includes 125 study area and stormwater BMP areas B, C and E only.

GM2 delineated stormwater BMP areas A, D1, D, F and G (Refer to separator report.

0 350 700

Feet

PLAISTOW-KINGSTON 10044E

NH DEPARTMENT OF TRANSPORTATION

DELINEATED AND NWI WETLANDS

SCALE :	DATE :	FIGURE :
1 inch = 350 feet	DECEMBER 2021	1

New Hampshire DOT Department of Transportation | McFarland Johnson | GM2 ASSOCIATES

\\Mjcolo-fs\m\18301.00 GM2 Plaistow-Kingston\Draw\GIS\NEPA Figures\Figure 1 - Plaistow-Kingston Delineated and NWI Wetlands REV2.mxd

APPENDIX C – DATA FORMS

Wetland 1

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Plaistow Sampling Date: 8/16

Applicant/Owner: _____ State: NH Sampling Point: BBB

Investigator(s): SH & JT Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0%

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

Soil Map Unit Name: Chatfield-Hollis-Canton complex, 8-15%, very stony NWI classification: PEM

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ 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)
- ✓ 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): 0"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

Wetland 1

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. None			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Salix sp.	5	✓	
2. Populus tremuloides	5	✓	FACU
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Carex intumescens	10		
2. Lythrum Salicaria (P. loosestrife)	35	✓	OBL
3. Typha latifolia	2		
4. Phragmites australis	5		
5. Solidago altissma	7		
6. ~~Vine Creeper~~ Rubus hispidus	20	✓	FACW
7. Carex Scoparia	30	✓	FACW
8.			
9.			
10.			
11.			
12.			
	109 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
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% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 1

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3-2	90	5YR 3-4	10	Concent.	matrix & pore linings	Sandy clay loam	restrictive rock layer @ 6in

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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): 6in

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: _____ Sampling Date: 8/8

Applicant/Owner: _____ State: _____ Sampling Point: DA-WET

Investigator(s): SH & JT Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0%

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

Soil Map Unit Name: Greenwood Mucky Peat NWI classification: PFO1E

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	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)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0.1"
Water Table Present?	Yes ✓	No _____	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	85	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	85 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Ilex verticillata	5	✓	FACW
2. Acer rubrum	10	✓	FAC
3.			
4.			
5.			
6.			
7.			
	15 = Total Cover		
Herb Stratum (Plot size: 5)			
1. Onoclea sensibilis	40	✓	FACW
2. Ocmundastrum cinnamomea	10		
3. Arrowood	3		
4. VA Creeper	10		
5. Oriental bittersweet	5		
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	68 = Total Cover		
Woody Vine Stratum (Plot size: 30)			
1. Oriental bittersweet	15	✓	FACU
2. VA Creeper	3		
3.			
4.			
	18 = Total Cover		

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24"+	2.5Y 2.5/1	100%	—	—	—	—	Organic	Muck

[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) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

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**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 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 (TF12)
- ___ 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 ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Plaistow Sampling Date: 6/18

Applicant/Owner: _____ State: NH Sampling Point: MJ1-WET

Investigator(s): SH & JT Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

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

Soil Map Unit Name: _____ NWI classification: PEM

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

Are Vegetation _____, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

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

Excavated Stormwater Swale

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): 6in
Saturation Present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches): 0in

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. None			
3.			
4.			
5.			
6.			
7.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15)			
1. ~~Cornus~~ Swida amomum	30	✓	FACW
2. Cornus/Swida			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Purple loosestrife	40	✓	OBL
2. Blue vervain	5		
3. Typha latifolia	7		
4. Scirpus cyperinus	5		
5. Lysimachia terrestris	25	✓	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	82 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1. Vitis sp.	25	✓	
2.			
3.			
4.			
	25 = 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% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3-1	95	7.5YR 3-4	5	Concent.	matrix	coarse sandy loam	

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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** _____

Remarks:

Disturbed soil
gravelly fill

Wetland 3

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Plaistow Sampling Date: 08/08/18

Applicant/Owner: _____ State: NH Sampling Point: AAA

Investigator(s): SHB JT Section, Township, Range: _____

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

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

Soil Map Unit Name: Chatfield-Hollis-Canton complex, 8-15% slopes, Stoney NWI classification: PFO1E

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

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): 12

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

Wetland 3

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red maple	30	✓	FAC
2. red oak	10	✓	Facu
3. white oak	10	✓	facu
4.			
5.			
6.			
7.			
	50	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. New york fern	30	✓	FAC
2. Canada mayflower	10		
3. Virginia creeper	10		
4. sensitive fern	2		
5. maple leaf viburnum	3		
6. white meadow rue	2		
7. rosa sp	3		
	80	= Total Cover	

Herb Stratum (Plot size: _____)			
1. red maple	30	✓	FAC
2. green ash	10		
3. winterberry	20	✓	FACW
4. beaked hazelnut	5		✓
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 3

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10 YR 3/2	100					loam	
10-12	10 YR 4/2	80	7.5YR 4/6	5	C	M	clay loam	
TREE			2.5YR 5/3	15	D	M		
12-18	2.5Y 5/3	80	7.5YR 4/6	20	C	M	clay loam	

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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 _____

Remarks:

Wetland 4

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 8/8/18

Applicant/Owner: State: NH Sampling Point: ZZ

Investigator(s): SH & JT Section, Township, Range:

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

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

Soil Map Unit Name: Pipestone Sand, 0-5% Slopes NWI classification: PFO

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ✓	No ____	

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): 14 in
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0 in

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

Wetland 4

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple (Acer rubrum)	60	✓	FAC
2. White Pine (Pinus strobus)	10		
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. Black Cherry	10		
2. Northern arrowwood	15	✓	FAC
3. Red maple	35	✓	FAC
4. elderberry	2		
5. green ash	2		
6. highbush blueberry	5		
7.			
	69	= Total Cover	

Herb Stratum (Plot size: _____)			
1. Canada Mayflower	25	✓	FACU
2. Poison Sumac	15	✓	OBL
3. Bristly dewberry	5		
4. Rough goldenrod	5		
5. fuzzball Sedge	3		
6. Sensitive fern	2		
7. meadowsweet	2		
8. marsh fern	2		
9.			
10.			
11.			
12.			
	59	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1. Vitus SP	15	✓	
2.			
3.			
4.			
	15	= 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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 4

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100						mucky
6-18	10YR 3/1	100						Clay loam

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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** _____

Remarks:

Wetland 5

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 8/16/18

Applicant/Owner: _____ State: _____ Sampling Point: 1

Investigator(s): SH & JT Section, Township, Range: _____

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

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

Soil Map Unit Name: Pipestone Sand, 0-5% slopes NWI classification: PFO

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

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): 8in
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0 in

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

Wetland 5

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	80	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	80 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1. Arrowood	25	✓	FAC
2. Fraxinus Pensylvanica	10		
3. Highbush Blueberry	5		
4.			
5.			
6.			
7.			
	40 ~~35~~ = Total Cover		

Herb Stratum (Plot size: 5)			
1. Impatiens capensis	40	✓	FACW
2. Equisitum arvense	15	✓	FAC
3. Galium palustris	10		
4. Rubus hispidus	10		
5. Wild Sarsparilla	7		
6. Sambucus nigra	5		
7.			
8.			
9.			
10.			
11.			
12.			
	87 = Total Cover		

Woody Vine Stratum (Plot size: 30)			
1.			
2. None			
3.			
4.			
	0 = 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 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 5

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/1	100						clay loam
4-18	2.5Y 4-2	90	7.5YR 3-4	10	C	M		Clay

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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): 18+

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston City/County: Kingston Sampling Date: 8/8/18

Applicant/Owner: _____ State: NH Sampling Point: YY

Investigator(s): SH & JT Section, Township, Range: _____

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

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

Soil Map Unit Name: Pipestone sand, 0-5% slopes NWI classification: PEM

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

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): 6 in
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

PEM bordering a stream

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple	10	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1. arrowleaved tearthumb	45	✓	OBL
2. pickerel weed	5		
3. royal fern	25	✓	OBL
4. broad leaved cattail	10		
5.			
6.			
7.			
	85 = Total Cover		

Herb Stratum (Plot size: _____)			
1.			
2. NO Sapling/Shrub			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	_____ = Total Cover		

Woody Vine Stratum (Plot size: _____)			
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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

SOIL Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100						mucky
6-18	10YR 3/1	95	5YR 4/6	5	C	M		Sandy clay loam

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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** _____

Remarks:

Wetland 10

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: _____ City/County: _____ Sampling Date: 8/8/18

Applicant/Owner: _____ State: _____ Sampling Point: [redacted] 4

Investigator(s): _____ Section, Township, Range: _____

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

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

Soil Map Unit Name: Greenwood mucky peat NWI classification: [redacted] PSS/PFO

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

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

PEM, (fringe) bordering the stream transitioning to a PFO/PSS, data point was conducted in the PSS/PFO area.

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): 12
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

Wetland 10

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red maple	45	✓	FAC
2. American elm	15	✓	FACW
3.			
4.			
5.			
6.			
7.			
	70 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1. red mulberry	10	✓	FACU
2. black elderberry	20	✓	FACW
3. Northern arrowwood	15	✓	FAC
4.			
5.			
6.			
7.			
	45 = Total Cover		

Herb Stratum (Plot size: _____)			
1. Cinnamon fern	11		
2. Poison Ivy	30	✓	FAC
3. rough goldenrod	15	✓	FAC
4. Carex Scoparia	3		
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	59 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1. Poison Ivy	10	✓	FAC
2.			
3.			
4.			
	10 = 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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 10

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/1	100						clay loam
3-8	10YR 4/1	95	5YR 4/5	5	C	M		sandy clay loam
8-18	2.5Y 5/2	85	10YR 4/6	15	C	M/PL		sandy clay loam

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 8/8/18

Applicant/Owner: State: NH Sampling Point: FR5

Investigator(s): SHB JT Section, Township, Range:

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

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

Soil Map Unit Name: Greenwood Muck, Peat NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ 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 ____	**Is the Sampled Area within a Wetland?** **Yes** ✓ **No** ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ 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)
- ___ 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): 3in
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. red maple	5	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	✓ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Common winterberry	35	✓	FACW
2. Speckled alder	20	✓	FACW
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)		✓	
1. Sensitive fern	20	FAC	FACW
2. tussock sedge	15	✓	OBL
3. broad leaf cattail	5		OBL
4. Royal fern	30	✓	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR2/1	100						mucky
8-12	10YR4/2	95	5YR 4/4	5	C	M		clay loam

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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 _____

Remarks:

Wetland 13

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston City/County: Sampling Date: 8/8/16

Applicant/Owner: NHDOT State: NH Sampling Point: O-WET

Investigator(s): SH + JT Section, Township, Range:

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

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

Soil Map Unit Name: Sc:o very fine sandy loam 0-5% slopes NWI classification: PFO

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ✓	No ____	

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): 10 in

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

Wetland 13

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	50%	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. Ilex Verticilata	20	✓	FACW
2. Spice bush	10	✓	FACW
3. Red Maple	5		
4. Fraxinus Pensylvanica	3		
5. Lonicera sp.	3		
6.			
7.			
	41	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Solidago rugosa	15%	✓	FAC
2. Carex Stricta	7%	✓	OBL
3. Poison ivy	5%		
4. Prickly dewberry	5%		
5. Impatiens capensis	3%		
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	35	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1. Vitis	15	✓	
2. Bittersweet	15	✓	UPL
3. Poison ivy	5		
4.			
	35%	= 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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 13

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/1	97	5YR 3/4	3	C	M/PL		Sandy clay loam
4-10	10YR 4/2	95	7.5YR 4/4	5	C	PL		Clay loam
10-18	2.5Y 5/2	85	10YR 4/6	15	C	M		Clay

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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 _____

Remarks:

Stony @ 18in

Saturation 10in

Wetland 15

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 8/8/18

Applicant/Owner: NHDOT State: NH Sampling Point: TS01-WET

Investigator(s): SH + JT Section, Township, Range: _____

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

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

Soil Map Unit Name: Canton gravelly fine sandy loam, 8-15% slopes, very stony NWI classification: PFO

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	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)
- ✓ 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): 5 in
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0 in

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

Wetland 15

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	35%	✓	FAC
2. Betula lenta	10%	✓	FACU
3.			
4.			
5.			
6.			
7.			
	45%	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. Fraxinus Pensylvanica	7	✓	FACW
2. Acer rubrum	7	✓	FAC
3. Red mulberry	3		
4. Witch hazel	10	✓	FACU
5. Eastern Hemlock	5		
6.			
7.			
	32	= Total Cover	

Herb Stratum (Plot size: _____)			
1. Marsh Fern	70	✓	FACW
2. Sens Fern	5		
3. Cinn Fern	10		
4. Creeping buttercup	15		
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 15

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	95	7.5YR 4/6	5	C	M		clay loam
2-16	10YR 4/1	90	10YR 4/4	10	C	PL&M		Clay

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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): 16in

Hydric Soil Present? Yes ✓ No ___

Remarks:

Wetland 16

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 8/8/18

Applicant/Owner: State: NH Sampling Point: P

Investigator(s): SH & JT Section, Township, Range:

Landform (hillslope, terrace, etc.): deep depression Local relief (concave, convex, none): concave Slope (%): 1 to

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

Soil Map Unit Name: Canton gravel fine sandy loam 3-8% 8-15% Slopes NWI classification: PFO

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ✓	No ____	

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): 18
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

Wetland 16

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple	40	✓	FAC
2. Red Oak	15		
3. Quaking Aspen	15		
4. White Pine	20		
5.			
6.			
7.			
	80 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1. Winterberry	40	✓	FACW
2. green ash	5		
3. highbush blueberry	15	✓	FACW
4. white pine	2		
5.			
6.			
7.			
	62 = Total Cover		

Herb Stratum (Plot size: _____)			
1. Royal Fern	20	✓	OBL
2. bristly dewberry	3		
3. wintergreen	7		
4. Canada may flower	3		
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	33 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 16

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10 YR 2/1	98	7.5 YR 4/4	2	C	PL		~~Sandy clay~~ clay loam
11-18	10 YR 6/1	100						Sandy clay

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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** _____

Remarks:

Wetland 18

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 8/8/18

Applicant/Owner: State: NH Sampling Point: Q-WET

Investigator(s): SH & JT Section, Township, Range:

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

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

Soil Map Unit Name: Canton gravelly fine sandy loam, 3-8%, very stony NWI classification: PSS/FO

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

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ 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 ___	**Is the Sampled Area within a Wetland?** Yes ✓ No ___
Hydric Soil Present?	Yes ✓ No ___	If yes, optional Wetland Site ID: ___
Wetland Hydrology Present?	Yes ✓ No ___	

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): 8 in
Saturation Present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

Wetland 18

VEGETATION – Use scientific names of plants. Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. Black Gum	5	✓	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15)			
1. Witch hazel	15	✓	FACU
2. Red Maple	25	✓	FAC
3. Black gum	20	✓	FAC
4. Gray Birch	5		
5. Ilex Verticillata	5		
6. Staghorn Sumac	2		
7. Sweet pepperbush	3		
	75 ~~70~~ = Total Cover		
Herb Stratum (Plot size: 5)			
1. Cinnamon Fern	50	✓	FACW
2. Jewelweed	25	✓	FACW*
3. Joe-pye weed (spotted)	10		
4. Purple loosestrife	15		
5. Symphiotrichum Sp (Aster)	10		
6. Typha latifolia	3		
7.	~~4~~		
8.			
9.			
10.			
11.			
12.			
	113 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Bittersweet	2	✓	
2. Vitis Sp.	~~3~~ 5	✓	
3.			
4.			
	~~7~~ = 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: 8 (B)

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

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 18

Sampling Point: _____

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	90	5YR 3/4	10				Clay loam
5-16	10YR 4/2	95	7.5YR 4/6	5				Sandy clay loam

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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 _____

Remarks:

rocky

Wetland 17

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 8/8/18

Applicant/Owner: State: NH Sampling Point: WW

Investigator(s): SH & JT Section, Township, Range:

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

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

Soil Map Unit Name: Canton gravelly fine sandy loam, 8-15% slopes very stony NWI classification: PFO

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ 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)
- ___ 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): 0

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

Wetland 17

VEGETATION – Use scientific names of plants. Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. black birch	15	✓	FACU
2. red maple	30	✓	FAC
3. green ash	10		
4.			
5.			
6.			
7.			
	55	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. mulberry	3	✓	FACU
2. green ash	3	✓	FACW
3. red maple	7	✓	FAC
4.			
5.			
6.			
7.			
	13	= Total Cover	

Herb Stratum (Plot size: _____)			
1. Creeping buttercup	20	✓	FAC
2. jewelweed (spotted)	15	✓	FACW
3. poison ivy	10		
4. jack in the pulpit	3		
5. Carex crinita	10		
6. enchanters nightshade	3		
7.			
8.			
9.			
10.			
11.			
12.			
	Cel	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
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: 7 (B)

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals:	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 17

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	98	7.5YR 3/4	2	C	PL		Sandy clay loam

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: None

Depth (inches): 2m

Hydric Soil Present? Yes ✓ No ____

Remarks:

Wetland 14

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston Rt 125 City/County: Kingston Sampling Date: 7/3/18

Applicant/Owner: State: NH Sampling Point: XX

Investigator(s): SH & JT Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): flat/mound Slope (%): 1

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

Soil Map Unit Name: Windsor loamy sand, 0-3% & Canton gravelly fine sandy loam NWI classification: PFO1E

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ 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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	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)
- ✓ 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 ____

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

Remarks:

Wetland 14

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Red Maple	40	✓	FAC
2. Black Birch	40	✓	FACU
3. Green Ash	10		
4. red oak	2		
5.			
6.			
7.			
	92	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. Eastern hemlock	8		
2. Common winterberry	30	✓	FACW
3. Red maple	5		
4. green ash	5		
5.			
6.			
7.			
	48	= Total Cover	

Herb Stratum (Plot size: _____)			
1. common winterberry	10	✓	FACW
2. Sarsaparilla	2		
3. canada mayflower	2		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	_____	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1. Vitus Sp			
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: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

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 _____

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

Wetland 14

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1								Organic leaf litter
1-2	10YR 3/1	100						clay loam
2-7	10YR 4/1	97	5YR 4/6	3	C	M		"
7-14	2.5 YR 6/2	70	10YR 4/6	30	C	PL/M		"

[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) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ 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)

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)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ 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 (TF12)
- ___ 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 _____

Remarks:

APPENDIX D – LITTLE RIVER STREAM ASSESSMENT

NHDOT Plaistow-Kingston Project X-A000(378) 10044E

Roadway Improvement Project

Little River Stream Assessment

NH Route 125 & Diamond Oak/Granite Fields Driveway Stream Crossings

Kingston, New Hampshire

August 13, 2019

The Little River crosses under the project area in two locations. The first crossing is NH Route 125 over the Little River. The structure at this location consists of a 48" reinforced concrete pipe (RCP). The second crossing is located approximately 240' southeast of the first crossing, where Diamond Oaks/Granite Fields driveway crosses the Little River. The structure at this location is also a 48" RCP.

At the crossing locations the Little River is a 3rd Order Stream with an approximate watershed size of 3.4 square miles. Based on the NH DES Stream Crossing Rules (Env-Wt 900) both of these crossing locations are considered Tier 3 stream crossings.

A stream assessment was completed by McFarland Johnson, Inc. on August 8, 2018. A stream assessment figure, data sheets and photographs of the existing conditions are enclosed. The following is a summary of the physical geomorphic characteristics of the Little River in the vicinity of the crossing locations:

Average Bankfull Width (W_{bf}):	23'
Average Bankfull Depth (D_{bf}):	2.2'
Flood Prone Width (W_{fpa}):	100'
Entrenchment Ratio (W_{fpa}/W_{bf}):	4.3
Width/Depth Ratio: (W_{bf}/D_{bf}):	10.5
Sinuosity:	1.11
Channel Slope:	0.1-2%
Channel Material:	Predominately gravel, patches of sand, and some cobbles

Based on these characteristics the stream channel is slightly entrenched, has a low width to depth ratio, low to moderate sinuosity, and a relatively low channel slope. The dominant substrate is gravel, with patches of sand and cobbles interspersed throughout. The Rosgen Classification for this type of river is C4. Based on this information the existing 48" RCPs are undersized for this crossing.

Neither culvert outlet was perched, however the lack of a natural stream bottom through the structure deters aquatic organism passage. Terrestrial wildlife passage along the river corridor is also impeded by the lack of banks or wildlife shelves through the crossing structure.

The Little River has a broad floodplain associated with both the upstream and downstream reaches. Emergent and aquatic vegetation growing within portions of the stream and the adjacent floodplain included pickerelweed (*Pontederia cordata*), broad-leaved cattail (*Typha latifolia*), yellow pond-lily (*Nuphar variegata*) royal fern (*Osmunda regalis*), sensitive fern (*Onoclea sensibilis*), and sedges (*Carex spp.*). Shrub species within the floodplain included winterberry (*Ilex verticillata*) and arrowwood (*Viburnum dentatum*). Tree species in the riparian areas were dominated by red maple (*Acer rubrum*).

Top of bank (TOB) lines associated with the Little River were delineated and are shown on the Wetlands Delineation Map south of NH Route 125. This is because for the majority of the length of the reach within the Study Area the Little River is bordered by a broad, flat, adjacent wetland/floodplain area and does not have a clearly defined TOB.

Data for a reference reach was not collected due to existing site conditions and difficulty accessing these areas. Portions of the adjacent wetlands were inundated hindering access to the upstream and downstream reaches. For this reason, the ordinary high water of the Little River both downstream and upstream of the Diamond Oaks drive crossing was not able to be completely delineated throughout the entire study area.

NH STREAM CROSSING ASSESSMENT

OFFICE REVIEW TASKS

Project Name/Number	*Plaistow-Kingston, 10044E*	**Town/ County**	*Kingston / Rockingham County, NH*	**Street Name**	*Route 125*	**Waterbody Name**	*Little River*
Watershed Size	https://streamstats.usgs.gov/ss/ *3.4* SQ MI			**Stream Crossing Tier**	*3* (If Tier 3, See Additional Requirements for Tier 3 Crossings)	**NHDOT Structure ID**	*N/A*
Estimated Bankfull Width	BFW= (watershed in sq miles^0.4892)(12.469) *22.7* FT			**Stream Order**	*3*	**Lat/Long**	*42.863106, -71.090813*

FIELD REVIEW TASKS

Investigators	*SH, JT*	**Date**	*8-Aug-18*	**Regime**	**PER**	INT	EPHM

Existing Structure

Type	Bridge	Arch	Open Box	Closed Box	Open Bottom Arch	Pipe Arch/Squash Pipe	**Circular**	Other	**Size**	*48"*
Material	*Reinforced concrete pipe (RCP)* (concrete, corrugated metal, smooth metal, HDPE, PVC, wood, other)						**Perched Outlet**	YES **NO**	Distance from invert to the water surface:	*N/A*
Water Depth (ft)	At Inlet: *2*		At Outlet: *2.5*		In Structure: *1.75*		**Continuous Substrate**	YES / **NO**	**Type**	*N/A*
Flow	No Flow		Isolated Pools		**Continuous Flow**					
Tailwater Control	**YES** / NO	Location (distance from outlet): *15'*		Materials: *Cobble/ gravel bar*			**Pool Configuration**	Width: *10'*	Length: *15'*	Max Depth: *2.5'*
Angle of Stream Flow Approaching Structure	Sharp Bend (45-90)	Mild Bend (5-45)	**Naturally Straight**	Channelized Straight			**Photos**	Outlet Structure		Inlet Structure

Notes (habitat features: rifle, run, pool, step, glide; woody debris, undercut banks, shading, aquatic life observed):
Emergent/aquatic vegetation in channel: pickerelweed (*Pontederia cordata*), broad-leaved cattail (*Typha latifolia*), yellow pond-lily (*Nuphar variegata*)
Green frogs (*Lithobates clamitans*) observed

Dominant Channel Substrate (Visual Assessment)

Upstream	Silt	**Sand**	**Gravel**	**Cobble**	Boulder	Bedrock	**Notes:** *Mucky material present*
Downstream	Silt	Sand	**Gravel**	**Cobble**	Boulder	Bedrock	**Notes:**
In Structure	Silt	Sand	Gravel	Cobble	Boulder	Bedrock	**Notes:**

Riparian Zone

Riparian Zone Present	YES **NO**		**Dominant Vegetation**	Red Maple (*Acer rubrum*)
Width of Riparian Zone	*N/A*			
Vegetation Density	Absent **Low**	Medium	High	

Additional Requirements for Tier 3 Crossings

Crossing Location

UPSTREAM

	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Average
Bankfull Width (Wbf)	*25*	*18*	*13*			*18.7*
Avg Bankfull Depth (Dbf)	*2.5*	*2.5*	*1.5*			*2.2*
Flood-Prone Width (2x Max Dbf)	*110*	*110*	*110*			*110*

Notes: *Loc 1 - 10' from structure; Loc 2 - 25' from structure; Loc 3 - 40' from structure*
All Measurements are in Feet

DOWNSTREAM

	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Average
Bankfull Width (Wbf)	*15*	*21*	*28*			*21.3*
Avg Bankfull Depth (Dbf)	*1.67*	*1.58*	*1.75*			*1.67*
Flood-Prone Width (2x Max Dbf)	*20*	*34*	*34*			*29.3*

Notes: *Loc 1 - 10' from structure; Loc 2 - 30' from structure; Loc 3 - 50' from structure*
All Measurements are in Feet

Reference Reach

	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Average
Bankfull Width (Wbf)						
Avg Bankfull Depth (Dbf)						
Flood-Prone Width (2x Max Dbf)						

Notes (explain why cross section is considered representative):

Photos: ___

OFFICE REVIEW TASKS

	At Crossing	Reference Reach
Entrenchment Ratio: (Wfpa/Wbf)	70' / 20' = **3.5**	
Width/Depth Ratio: (Wbf/Dbf)	20' / 1.9' = **10.5**	
Sinuosity: (stream length/valley length) (from aerial)	4,200' / 3,800' = **1.11**	
Channel Slope	**0.001 - 0.02**	
Channel Material	44% Gravel, 27% Sand, 27% Cobble, 2% Boulder	
Rosgen Classification	**C4**	

Notes:

Pebble Counts

Substrate Material	Upstream from Crossing	Downstream from Crossing	Within Structure	Reference Reach
Sand (<0.08")				
Gravel (0.08"-2.5")				
Cobble (2.51"-10")				
Boulder (10.1"-13.3')				
Bedrock (> 13.3')				

Little River Stream Assessment Photo Log • Route 125 Crossing
Kingston, New Hampshire • NHDOT Plaistow-Kingston 10044-B

Photo 1: Little River upstream from NH Route 125 Crossing	**DATE: 08/08/2018**
	**Comments:** Facing upstream, note aquatic/emergent vegetation in channel

Photo 2: Little River upstream from NH Route 125 Crossing	**DATE: 08/08/2018**
	**Comments:** Facing downstream, note aquatic/emergent vegetation in channel

Photo 3: Little River upstream from NH Route 125 Crossing	**DATE: 08/08/2018**
	**Comments:** Facing downstream, 48” RCP inlet

Photo 4: Little River downstream from NH Route 125 Crossing	**DATE: 08/08/2018**
	**Comments:** 48” RCP outlet

Photo 5: Little River downstream from NH Route 125 Crossing	**DATE: 08/08/2018**
	**Comments:** Bend in channel downstream from crossing, facing upstream

Photo 6: Little River downstream from NH Route 125 Crossing	**DATE: 08/08/2018**
	**Comments:** River channel downstream from crossing, facing downstream

NH STREAM CROSSING ASSESSMENT

OFFICE REVIEW TASKS

Project Name/Number	*Plaistow-Kingston, 10044E*	**Town/ County**	*Kingston / Rockingham County, NH*	**Street Name**	*Diamond Oaks (Driveway)*	**Waterbody Name**	*Little River*
Watershed Size	https://streamstats.usgs.gov/ss/ *3.4* SQ MI			**Stream Crossing Tier**	*3* (If Tier 3, See Additional Requirements for Tier 3 Crossings)	**NHDOT Structure ID**	*N/A*
Estimated Bankfull Width	BFW= (watershed in sq miles^0.4892)(12.469) *22.7* FT			**Stream Order**	*3*	**Lat/Long**	*42.863106, -71.090813*

FIELD REVIEW TASKS

Investigators	*SH, JT*	**Date**	*8-Aug-18*	**Regime**	**PER**	INT	EPHM

Existing Structure

Type	Bridge	Arch	Open Box	Closed Box	Open Bottom Arch	Pipe Arch/Squash Pipe	**Circular**	Other	**Size**	*48"*
Material	*Reinforced concrete pipe (RCP)* (concrete, corrugated metal, smooth metal, HDPE, PVC, wood, other)						**Perched Outlet**	YES **NO**	Distance from invert to the water surface:	*N/A*
Water Depth (ft)	At Inlet: *1*		At Outlet: *1.58*		In Structure: *1*		**Continuous Substrate**	YES / **NO**	**Type**	*N/A*
Flow	No Flow		Isolated Pools		**Continuous Flow**					
Tailwater Control	**YES** / NO	Location (distance from outlet): *50'*		Materials: *Vegetation bars*			**Pool Configuration**	Width: *10'*	Length: *15'*	Max Depth: *2.5'*
Angle of Stream Flow Approaching Structure	Sharp Bend (45-90)	**Mild Bend (5-45)**	Naturally Straight	Channelized Straight			**Photos**	Outlet Structure		Inlet Structure

Notes (habitat features: rifle, run, pool, step, glide; woody debris, undercut banks, shading, aquatic life observed):
Emergent/aquatic vegetation in channel: pickerelweed (*Pontederia cordata*), broad-leaved cattail (*Typha latifolia*), yellow pond-lily (*Nuphar variegata*)
Green frogs (*Lithobates clamitans*) observed

Dominant Channel Substrate (Visual Assessment)

Upstream	Silt	**Sand**	**Gravel**	**Cobble**	Boulder	Bedrock	**Notes:** *Mucky material present*
Downstream	Silt	**Sand**	**Gravel**	**Cobble**	Boulder	Bedrock	**Notes:**
In Structure	Silt	Sand	Gravel	Cobble	Boulder	Bedrock	**Notes:**

Riparian Zone

Riparian Zone Present	YES	**NO**	**Dominant Vegetation**	**Red Maple (*Acer rubrum*), winterberry (*Ilex verticillata*), arrowwood (*Viburnum dentatum*)**
Width of Riparian Zone	*30'*			
Vegetation Density	Absent	**Low**	Medium	High

Additional Requirements for Tier 3 Crossings

Crossing Location

UPSTREAM

	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Average
Bankfull Width (Wbf)	*45*	*12*	*14*			*23.7*
Avg Bankfull Depth (Dbf)	*2.58*	*2*	*2.08*			*2.2*
Flood-Prone Width (2x Max Dbf)	*100*	*90*	*85*			*92*

Notes: *Loc 1 - 10' from structure; Loc 2 - 25' from structure; Loc 3 - 40' from structure*
All Measurements are in Feet

DOWNSTREAM

	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Average
Bankfull Width (Wbf)	*40*	*28*	*19*			*29*
Avg Bankfull Depth (Dbf)	*3.08*	*2.5*	*2.08*			*2.6*
Flood-Prone Width (2x Max Dbf)	*150*	*180*	*180*			*170*

Notes: *Loc 1 - 10' from structure; Loc 2 - 30' from structure; Loc 3 - 50' from structure*
All Measurements are in Feet

Reference Reach

	Loc 1	Loc 2	Loc 3	Loc 4	Loc 5	Average
Bankfull Width (Wbf)						
Avg Bankfull Depth (Dbf)						
Flood-Prone Width (2x Max Dbf)						

Notes (explain why cross section is considered representative):

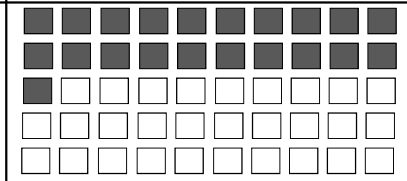
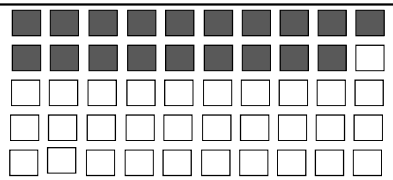
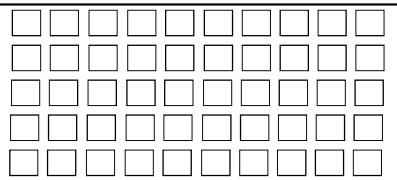
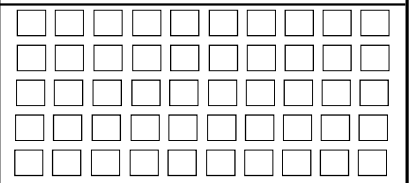
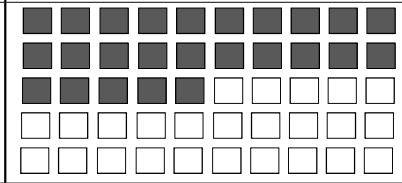
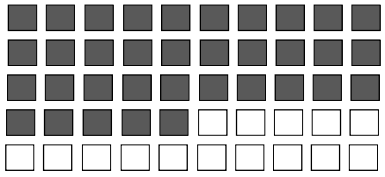
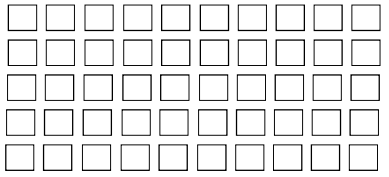
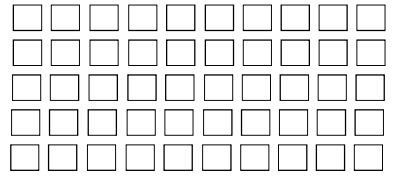
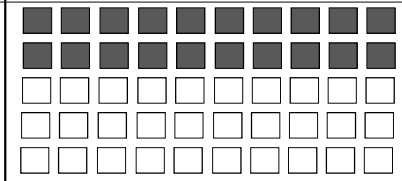
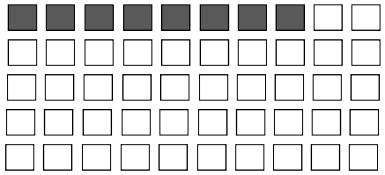
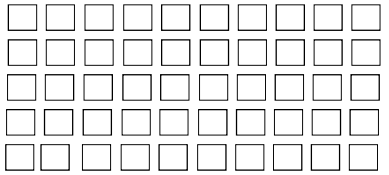
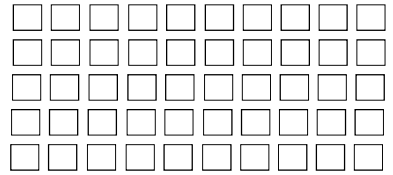
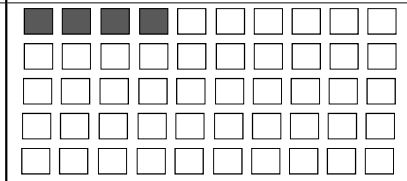
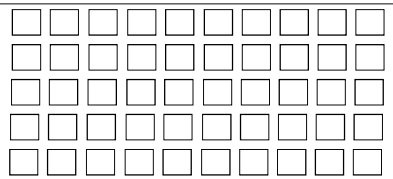
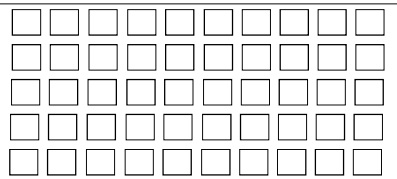
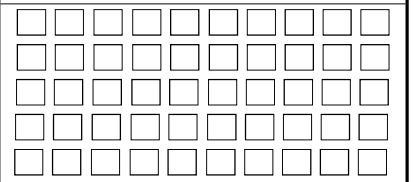
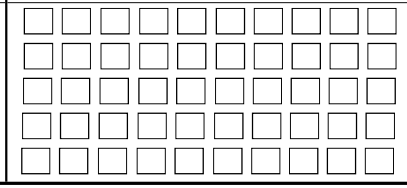
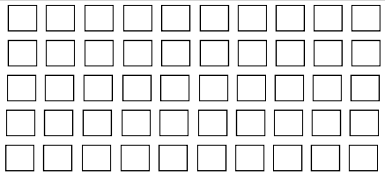
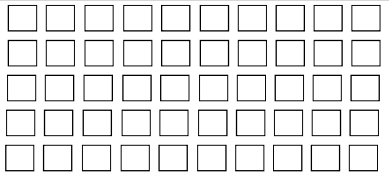
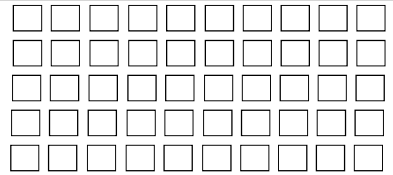
Photos: ___

OFFICE REVIEW TASKS

	At Crossing		Reference Reach	
Entrenchment Ratio: (Wfpa/Wbf)	131 / 26.4 = **5.0**		Entrenchment Ratio: (Wfpa/Wbf)	
Width/Depth Ratio: (Wbf/Dbf)	26.4 / 2.4 = **11**		Width/Depth Ratio: (Wbf/Dbf)	
Sinuosity: (stream length/valley length) (from aerial)	4,200' / 3,800' = **1.11**		Sinuosity: (stream length/valley length)	
Channel Slope	**0.001 - 0.02**		Channel Slope	
Channel Material	46% Gravel, 30% Sand, 21% Cobble, 3% Boulder		Channel Material	
Rosgen Classification	**C4**		Rosgen Classification	

Notes:

Pebble Counts

Substrate Material	Upstream from Crossing	Downstream from Crossing	Within Structure	Reference Reach
Sand (<0.08")				
Gravel (0.08"-2.5")				
Cobble (2.51"-10")				
Boulder (10.1"-13.3')				
Bedrock (> 13.3')				

Little River Stream Assessment Photo Log • Diamond Oaks Driveway Crossing
Kingston, New Hampshire • NHDOT Plaistow-Kingston 10044-B

Photo 1: Little River upstream from Diamond Oaks Driveway Crossing	**DATE: 08/08/2018**
	**Comments:** Culvert inlet

Photo 2: Little River upstream from Diamond Oaks Driveway Crossing	**DATE: 08/08/2018**
	**Comments:** 48" RCP inlet facing downstream

Photo 3: Little River downstream from Diamond Oaks Driveway Crossing	**DATE: 08/08/2018**
	**Comments:** River channel flows through a forested wetland with a broad flat floodplain downstream of the second crossing, facing downstream

Photo 4: Little River downstream from Diamond Oaks Driveway Crossing	**DATE: 08/08/2018**
	**Comments:** Scour pool downstream from culvert outlet, facing upstream

0 100 200
Feet

PLAISTOW-KINGSTON 10044E
NH DEPARTMENT OF TRANSPORTATION

STREAM ASSESSMENT
LITTLE RIVER

SCALE :	DATE :	FIGURE :
1 inch = 100 feet	JANUARY 2019	1

McFarland Johnson

APPENDIX E – FUNCTIONS & VALUES EVALUATION FORMS

Wetland Function-Value Evaluation Form

Total area of wetland 0.25 (area within study area) Human made? ______ Is wetland part of a wildlife corridor? ______ or a "habitat island"? ______

Adjacent land use residential ______ Distance to nearest roadway or other development ≈ 40 ______

Dominant wetland systems present PEM ______ Contiguous undeveloped buffer zone present yes ______

Is the wetland a separate hydraulic system? ______ If not, where does the wetland lie in the drainage basin? ______

How many tributaries contribute to the wetland? 0 ______ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. BB3 ______
Latitude ______ Longitude ______
Prepared by: JT ______ Date ______
Wetland Impact:
Type ______ Area ______

Evaluation based on:
Office ______ Field ✓ ______
Corps manual wetland delineation completed? Y ✓ N ______

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	2,3,4,5,7,8,9,13	✓	This emergent PEM wetland is located in a depression downgradient of a major roadway
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,4	✓	This wetland is downgradient of a major roadway where sediment [illegible] are present.
Nutrient Removal	Y	3,2,4		
Production Export	Y	7,12,		
Sediment/Shoreline Stabilization	N	4		
Wildlife Habitat	N	13,14		
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	Y	1,4,12,13,15,17		This emergent wetland is dominated by purple loosestrife and grass
Visual Quality/Aesthetics	N	4		
ES Endangered Species Habitat	N			
Other	N			

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland ~0.5 (human made) (low lying, wet) Is wetland part of a wildlife corridor? ______ or a "habitat island"? ______

Adjacent land use ______ Distance to nearest roadway or other development ______

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present ______

Is the wetland a separate hydraulic system? ______ If not, where does the wetland lie in the drainage basin? ______

How many tributaries contribute to the wetland? ______ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. IDA

Latitude ______ Longitude ______

Prepared by ______ Date ______

Wetland Impact:
Type ______ Area ______

Evaluation based on:
Office ______ Field ______

Corps manual wetland delineation completed? Y ______ N ______

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		4, 15		
Floodflow Alteration	Y	3,4,5,7,8,9,	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,4,5,	✓	
Nutrient Removal	Y	3,4,5,7,	✓	
Production Export	N	1		
Sediment/Shoreline Stabilization	N	3,14,		
Wildlife Habitat	N	19		
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	1		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.8A (across a wooded area) Human made? ______ Is wetland part of a wildlife corridor? ______ or a "habitat island"? ______

Wetland I.D. AAA

Latitude ______ Longitude ______

Adjacent land use Commercial ______ Distance to nearest roadway or other development ______

Prepared by: ______ Date ______

Dominant wetland systems present PFO ______ Contiguous undeveloped buffer zone present NO ______

Wetland Impact: Type ______ Area ______

Is the wetland a separate hydraulic system? ______ If not, where does the wetland lie in the drainage basin? ______

Evaluation based on: Office ______ Field ______

How many tributaries contribute to the wetland? ______ Wildlife & vegetation diversity/abundance (see attached list)

Corps manual wetland delineation completed? Y ______ N ______

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	3,3,4,5,6	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,4,9	✓	
Nutrient Removal	Y	3,4,5,7,10	✓	
Production Export	N	2		
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	N	7,19		
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	1		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes: a portion of this wetland is located in NH 245 WAP supporting landscape

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.69 Human made? yes Is wetland part of a wildlife corridor? no or a habitat island? no

Adjacent land use Commercial Distance to nearest roadway or other development ~38 ft

Dominant wetland systems present PEM Contiguous undeveloped buffer zone present yes

Is the wetland a separate hydrologic system? _____ If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list):

Wetland I.D. MW1

Latitude _____ Longitude _____

Prepared by _____ Date _____

Wetland type
Type _____ Area _____

Evaluation based on:
Office _____ Field _____

Corps manual wetland delineation completed? Y____ N____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	4,8,9,11,12	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,5,8	✓	
Nutrient Removal	Y	5,8,9,	✓	
Production Export	N			
Sediment/Shoreline Stabilization	N	3,4,8		
Wildlife Habitat	N			
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	13,		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to bibliography of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.85 acres in study area Human made? ______ Is wetland part of a wildlife corridor? no or a "habitat island"? no

Adjacent land use Commercial ______ Distance to nearest roadway or other development ______

Dominant wetland systems present PFO ______ Contiguous undeveloped buffer zone present no

Is the wetland a separate hydraulic system? ______ If not, where does the wetland lie in the drainage basin? ______

How many tributaries contribute to the wetland? ______ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. ZZ

Latitude ______ Longitude ______

Prepared by ______ Date ______

Wetland Impact: Type ______ Area ______

Evaluation based on: Office ______ Field ______

Corps manual wetland delineation completed? Y ______ N ______

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	2,3,4,5,6,8,9	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,3,5,4	✓	
Nutrient Removal	Y	3,5,7,10	✓	[illegible] organics [illegible]
Production Export		1,2,4		large of [illegible], [illegible] present in wetland.
Sediment/Shoreline Stabilization	NA			
Wildlife Habitat	Y	7,8,17,19,20	✓	
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N			
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes: A portion of this wetland is [illegible] as [illegible] 2015 [illegible] support landscape
Part of a large PFO wetland

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.3 acres Human made? no Is wetland part of a wildlife corridor? see notes or a "habitat island"? no

Adjacent land use Commercial, residential Distance to nearest roadway or other development

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present

Is the wetland a separate hydraulic system? If not, where does the wetland lie in the drainage basin?

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. L
Latitude Longitude
Prepared by: Date
Wetland Impact:
Type Area
Evaluation based on:
Office Field
Corps manual wetland delineation completed? Y N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	3,4,9,[illegible]	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,4,6	✓	
Nutrient Removal	Y	3,4,5,7,10	✓	
Production Export	N			
Sediment/Shoreline Stabilization	N/A			
Wildlife Habitat	N			[illegible] 2015 [illegible] surrounding landscape
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	1,17		
Visual Quality/Aesthetics	N	9		
ES Endangered Species Habitat	N			
Other	N			

Notes: [illegible] from wetland OR under [illegible] road to L.

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland [illegible] Human made? ___ Is wetland part of a wildlife corridor? ___ or a "habitat island"? ___

Adjacent land use Conservation ___ Distance to nearest roadway or other development ___

Dominant wetland systems present ___ Contiguous undeveloped buffer zone present ___

Is the wetland a separate hydraulic system? ___ If not, where does the wetland lie in the drainage basin? ___

How many tributaries contribute to the wetland? ___ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. YY
Latitude ___ Longitude ___
Prepared by: ___ Date ___
Wetland Impact:
Type ___ Area ___
Evaluation based on:
Office ___ Field ___
Corps manual wetland delineation completed? Y ___ N ___

Function/Value		Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		N			
Floodflow Alteration	*	Y	4, 6, 13		
Fish and Shellfish Habitat		N	4, 8		Little River
Sediment/Toxicant Retention	*	Y	1, 2, 4, 10, 12	✓	
Nutrient Removal	*	Y	~~1, 2, 4, 10, 12~~ 2, 3, 4, 5, 7, 8, 9	✓	
Production Export		N	2, 10, [illegible]		
Sediment/Shoreline Stabilization	*	Y	3, 5, 7, 12, 15	✓	
Wildlife Habitat		Y	7, 13, 19,		Mature supporting landscape
Recreation		N			
Educational/Scientific Value		N			
Uniqueness/Heritage		[illegible]	1, 7, [illegible] 22		1-2 EM on both sides of the stream. Stone culvert(s)
Visual Quality/Aesthetics		N			
ES Endangered Species Habitat		N			
Other					

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland? 0.04 Human made? Is wetland part of a wildlife corridor? ________ or a "habitat island"? ____

Adjacent land use Commercial ________ Distance to nearest roadway or other development ________

Dominant wetland systems present PSS/PFO ________ Contiguous undeveloped buffer zone present no

Is the wetland a separate hydraulic system? yes ________ If not, where does the wetland lie in the drainage basin? ________

How many tributaries contribute to the wetland? 1 ________ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. AA ________
Latitude ______ Longitude ________
Prepared by: ________ Date ________
Wetland Impact:
Type ________ Area ________

Evaluation based on:
Office ________ Field ________
Corps manual wetland delineation completed? Y ____ N ____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	2,4,7,9,13	✓	
Fish and Shellfish Habitat	N	4,8,		
Sediment/Toxicant Retention	Y	1,2,3,4,10,14	✓	
Nutrient Removal	Y	2,3,4,5,7,12	✓	
Production Export	N	2,		
Sediment/Shoreline Stabilization	N	3,4,5,		
Wildlife Habitat	N			
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	1,12		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland: 0.1 ac Human made? _____ Is wet and part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use: golf course/residential Distance to nearest roadway or other development _____

Dominant wetland systems present _____ Overgrown undeveloped buffer zone present _____

Is the wetland a separate hydraulic system? _____ If not, where does the wetland lie in the drainage basin? _____

How many inlets/outlets contribute to the wetland? _____ Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. FRS

Latitude _____ Longitude _____

Prepared by: _____ Date _____

Wetland Impact
Type _____ Area _____

Delineation based on:
Office _____ Field _____

Corps manual wetland delineation completed? Y ____ N ____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	5,6,7,8,10,14	✓	
Fish and Shellfish Habitat		8,		
Sediment/Toxicant Retention	Y	1,2,3,4,5,10,14	✓	
Nutrient Removal	Y	2,3,4,5,7,	✓	
Production Export	N	1		
Sediment/Shoreline Stabilization	Y	4,5,7,14		
Wildlife Habitat	Y	7,8,19,20,24		
Recreation	N			
Educational/Scenantic Value	N			
Uniqueness/Heritage	?	1,7,22,		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland [illegible] Human made? [illegible] Is wetland part of a wildlife corridor? ________ or a "habitat island"? ________

Adjacent land use residential ________ Distance to nearest roadway or other development 10ft

Dominant wetland systems present PFO ________ Contiguous undeveloped buffer zone present ________

Is the wetland a separate hydraulic system? no If not, where does the wetland lie in the drainage basin? [illegible]

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 0
Latitude ________ Longitude ________
Prepared by: ________ Date ________
Wetland Impact:
Type ________ Area ________

Evaluation based on:
Office ________ Field ✓
Corps manual wetland delineation completed? Y ____ N ____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N	8		
Floodflow Alteration	Y N	2,4,7		[illegible]
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,3,4	✓	
Nutrient Removal	Y	3,5,7,9	✓	
Production Export	N			[illegible]
Sediment/Shoreline Stabilization	NA			
Wildlife Habitat		3,8,7		
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N			
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 6.6 Human made? ______ Is wetland part of a wildlife corridor? ______ or a "habitat island"? ______

Adjacent land use residential, roadway, undeveloped Distance to nearest roadway or other development 15 ft

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present ______

Is the wetland a separate hydraulic system? YES If not, where does the wetland lie in the drainage basin? ______

How many tributaries contribute to the wetland? Ø Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. XY
Latitude ______ Longitude ______
Prepared by ______ Date ______
Wetland Impact:
Type ______ Area ______

Evaluation based on:
Office ______ Field ______
Corps manual wetland delineation completed? Y ______ N ______

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	3,7,9	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,4,9,5?	✓	
Nutrient Removal	~~Y~~ N	3,6,7		
Production Export	N	1		
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	Y	4,5,8		[illegible]
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	4		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat				
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.02 Human made? _____ Is wetland part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use [illegible] Distance to nearest roadway or other development 5/4+

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present NO

Is the wetland a separate hydrologic system? YES If not, where does the wetland lie in the drainage basin? _____

How many tributaries contribute to the wetland? 0 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. T-SW1

Latitude _____ Longitude _____

Prepared by: _____ Date

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office _____ (date) _____
Corps manual wetland delineation completed? Y____ N____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	3,4,7,8,1	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,4,5,	✓	
Nutrient Removal	Y	3,4,5,7,10	✓	
Production Export	N	2		
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	N			
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	6		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland: [illegible] Human made? _____ Is wetland part of a wildlife corridor? _____ or a "habitat island"? _____

Adjacent land use: [illegible] Distance to nearest roadway or other development: [illegible]

Dominant wetland systems present: PEM Contiguous undeveloped buffer zone present: _____

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? [illegible]

How many tributaries contribute to the wetland? [illegible] Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 7

Latitude: ____ Longitude: _____

Prepared by: _____ Date: _____

Wetland Impact:
Type: _____ Area: _____

Delineation based on:
Office _____ Field _____

Corps manual wetland delineation completed? Y _____ N _____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	2,3,4,6,8,9	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,3,4,9	✓	
Nutrient Removal	Y	3,4,5,7,	✓	
Production Export	N	1,2		
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	Y	7,8,11,12		
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N	1		
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations

Wetland Function-Value Evaluation Form

Total area of wetland 0.62 Human-made? Is wetland part of a wildlife corridor?___ or a "habitat island"?___

Adjacent land use:___ Distance to nearest roadway or other development___

Dominant wetland systems present: PSS/PEO Contiguous undeveloped buffer zone present___

Is the wetland a separate hydraulic system?___ If not, where does the wetland lie in the drainage area?___

How many tributaries contribute to the wetland? Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 6

Latitude___ Longitude___

Prepared by:___ Date___

Wetland Impact Type___ Area___

Evaluation based on: Office___ Field___

Corps manual wetland delineation completed? Y___ N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	Y	2,4,9,c	✓	
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,3,4,	✓	
Nutrient Removal	Y	3,4,5,7,8	✓	
Production Export	N	4,12		
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	N			
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N			
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

Wetland Function-Value Evaluation Form

Total area of wetland 0.01 (drainage ditch) Human made? ____ Is wetland part of a wildlife corridor? ____ or a "habitat island"? ____

Adjacent land use ____ Distance to nearest roadway or other development ____

Dominant wetland systems present ____ Contiguous undeveloped buffer zone present ____

Is the wetland a separate hydraulic system? ____ If not, where does the wetland lie in the drainage basin? ____

How many tributaries contribute to the wetland? ____ Wildlife & vegetation diversity/abundance (see attached list)

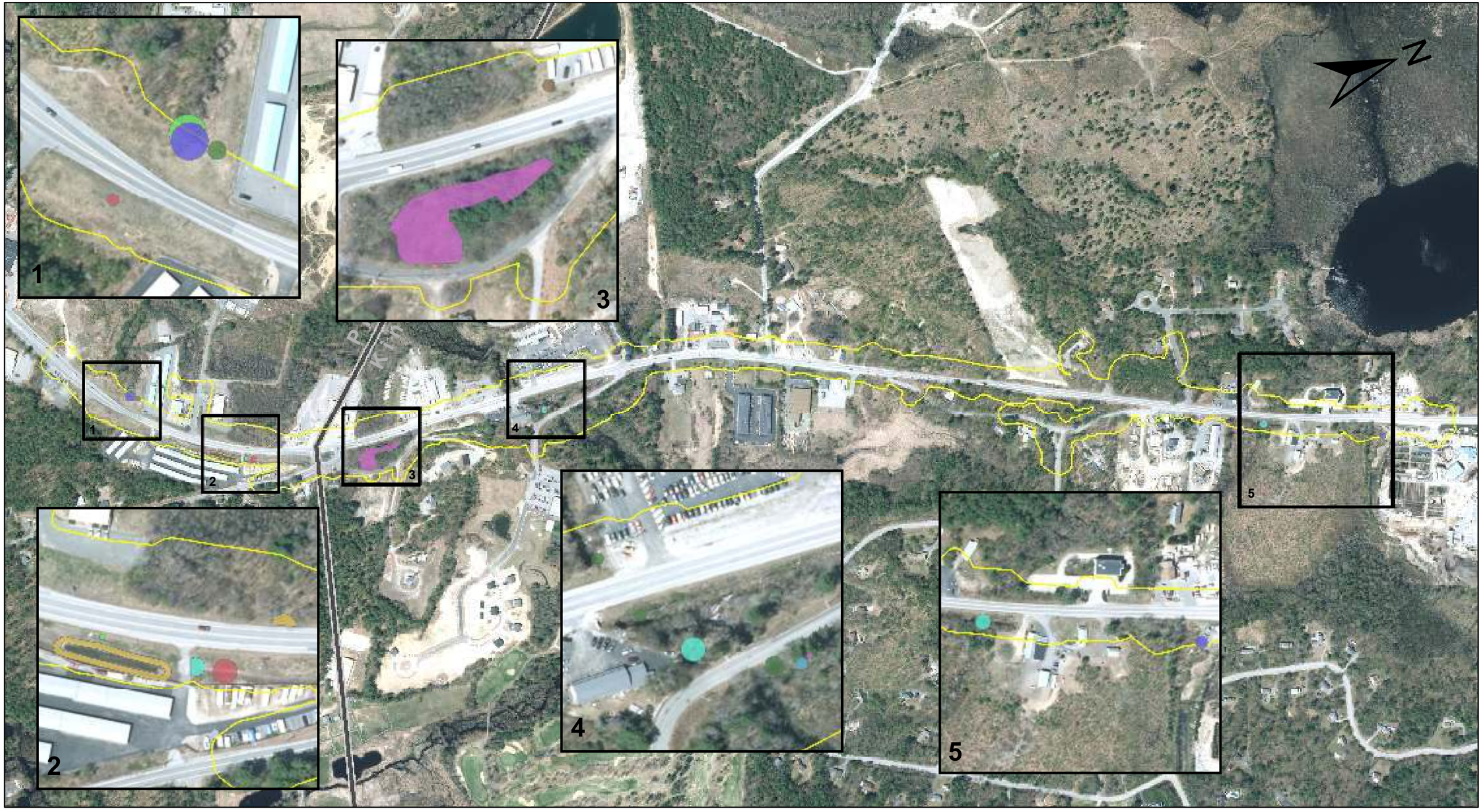
Wetland I.D. WW ____
Latitude ____ Longitude ____
Prepared by: ____ Date ____
Wetland Impact:
Type ____ Area ____
Evaluation based on:
Office ____ Field ____
Corps manual wetland delineation completed? Y ____ N ____

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	N			
Floodflow Alteration	N	3,4		
Fish and Shellfish Habitat	N			
Sediment/Toxicant Retention	Y	1,2,4	✓	
Nutrient Removal	N	5,7		
Production Export	N			
Sediment/Shoreline Stabilization	N			
Wildlife Habitat	N			
Recreation	N			
Educational/Scientific Value	N			
Uniqueness/Heritage	N			
Visual Quality/Aesthetics	N			
ES Endangered Species Habitat	N			
Other				

Notes:

* Refer to backup list of numbered considerations.

APPENDIX F – INVASIVE PLANTS LOCATION MAP



NHDOT Control Type, Species

- Type II, Japanese Knotweed
- Type II, Purple Loosestrife
- Type II, Common Reed
- Type I, Common Buckthorn
- Type I, Glossy Buckthorn
- Type I, Japanese Barberry
- Type I, Morrow's Honeysuckle
- Type I, Multiflora Rose
- Type I, Oriental Bittersweet
- Type II, Autumn Olive
- Study Area

0 550 1,100
Feet

PLAISTOW-KINGSTON 10044E
NH DEPARTMENT OF TRANSPORTATION

INVASIVE SPECIES

SCALE :	DATE :	FIGURE :
1 inch = 550 feet	FEBRUARY 2019	X

McFarland Johnson

M:\18288.00 NHDOT Route 108\Draw\GIS\Plaistow-Kingston Invasive Figure.mxd

PLAISTOW-KINGSTON 10044E
NH ROUTE 125
ROADWAY IMPROVEMENT PROJECT

OCTOBER 2019, JUNE 2020, and OCTOBER 2022

WETLAND DELINEATION REPORT

FOR

POTENTIAL STORMWATER BMP AREAS A, D, D1, F, & G

Prepared for:

NH Department of Transportation
7 Hazen Drive
Concord, NH 03302

Prepared by:

GM2 Associates, Inc.
197 Loudon Road, Suite 310
Concord, NH 03301

JULY 2020
REVISED NOVEMBER 2022

TABLE OF CONTENTS

APPENDICES

1. INTRODUCTION

This report provides a summary of the wetland resources that were delineated for potential stormwater Best Management Practice (BMP) Areas A, D, D1, F, and G for the NH Route 125 Roadway Improvement Project in Plaistow and Kingston, New Hampshire (NHDOT Project No. 10044E). Wetlands within the project corridor and within BMP Areas B, C, and E were delineated by McFarland-Johnson (MJ) in 2018. BMP Areas A, D, D1, F, and G were not delineated at that time since the locations had not yet been confirmed. Wetlands within these areas were delineated by GM2 in October 2019, June 2020, and October 2022.

BMP areas are shown on the maps in Appendix A and include:

- Area A: Sta. 2338+00 to Sta. 2342+00, northwest of NH Route 125 (south of Wetland BBB and storage facility);
- Area B: Sta. 2353+00 to Sta. 2359+00, east of NH Route 125 (between Kingston Road and Granite Road);
- Area C: Sta. 2365+00 to Sta. 2372+00, east of NH Route 124 (between Diamond Oaks Boulevard and the Little River)
- Area D: Sta. 2381+50 to Sta. 2386+00, east of NH Route 125 (near Wetland O);
- Area D1: Sta. 2376+00 to Sta. 2378+00, east of NH Route 125 (south of BMP Area D)
- Area E: Sta. 2397+00 to Sta. 2403+00, east of NH Route 125 (at northern end of Colonial Road)
- Area F: Sta. 2415+00, west of NH Route 125 (north of Plaistow-Kingston Animal Medical Center); and
- Area G: Sta. 2421+50 to Sta. 2428+00, west of NH Route 125 (NHDOT property at northern end of project).

2. METHODOLOGY

The study area for the wetland delineation completed by GM2 included BMP Areas A, D, D1, F, and G (shown on the maps in Appendix A. The delineation for Areas A, D, F, and G was completed on October 9, 15, and 18, 2019. The delineation for Area D1 was completed on June 9, 2020 and October 11, 2022. Wetlands were delineated by Jennifer Riordan (NH Certified Wetland Scientist #269) in accordance with the US Army Corps of Engineers (ACOE) 1987 Methodology and the ACOE Northcentral and Northeast Regional Supplement (2012). Individually-labeled flags were placed in the field to designate the wetland boundaries and the flags were survey-located. Wetland delineation field data forms were completed for each new wetland delineated and are included in Appendix B.

Federal wetland classifications were assigned in accordance with "Classification of Wetlands and Deepwater Habitats of the United States" (Federal Geographic Data Committee, 2013).

3. SUMMARY OF WETLAND RESOURCES

3.1 Wetland BBB

Wetland BBB is an emergent/scrub-shrub wetland located on the northwest side of NH Route 125 and adjacent to BMP Area A. It is bordered by a storage facility to the north and forested/shrub upland to the south. The wetland is classified as palustrine, emergent, persistent, seasonally flooded (PEM1C) and palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated (PSS1E). Dominant vegetation within the emergent portion includes wool grass (*Scirpus cyperinus*), purple loosestrife (*Lythrum salicaria*), cattail (*Typha latifolia*), common reed (*Phragmites australis*), and sedges (*Carex sp.*). Dominant vegetation within the scrub-shrub areas includes red maple (*Acer rubrum*), gray birch (*Betula populifolia*), and white pine (*Pinus strobus*) saplings, spicebush (*Lindera benzoin*), sensitive fern (*Onoclea sensibilis*), and royal fern (*Osmunda regalis*).

Wetland BBB begins near NH Route 125 at a buried culvert. No flowing water was observed at the time of the field review. Portions of the wetland had saturated soils and 1 to 2 inches of standing water. The wetland continues north beyond the study area.

The portion of Wetland BBB near NH Route 125 had been delineated by MJ in 2018. Since very few flags could be found, the wetland was re-flagged in 2019 and extended to cover the potential stormwater BMP area.

Wetland BBB, view toward NH Route 125

Wetland BBB, scrub-shrub area located further from NH Route 125

3.2 Wetland O

Wetland O is a large wetland located on the east side of NH Route 125, south of Colonial Road, in BMP Areas D and D1. It continues to the north and south of the study area and is part of a large wetland system that is associated with the Little River. The majority of the wetland within the study area is classified as palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E), although the wetland also contains emergent areas that are classified as palustrine, emergent, persistent, seasonally flooded/saturated (PEM1E). Beyond the study area, the wetland includes a ponded area and a perennial stream (a tributary to the Little River).

Vegetation within the forested portion of Wetland O includes red maple, highbush blueberry (*Vaccinium corymbosum*), multiflora rose (*Rosa multiflora*), common winterberry (*Ilex verticillata*), tussock sedge (*Carex stricta*), cinnamon fern (*Osmundastrum cinnamomeum*), and sensitive fern. Vegetation within the emergent portion of Wetland O within the study area includes cattail, tussock sedge, bluejoint grass (*Calamagrostis canadensis*), and purple loosestrife.

A portion of the wetland was previously delineated by MJ in 2018. The wetland boundary was extended by GM2 in 2019, 2020, and 2022 to cover BMP Areas D and D1.

Forested portion of Wetland O, in BMP Area D

Emergent/ponded portion of Wetland O, adjacent to BMP Area D

Narrow portion of Wetland O, in BMP Area D1

3.3 Stormwater Treatment Pond

A constructed stormwater treatment pond is located adjacent to Wetland O in BMP Area D1. A culvert was noted at the northern edge of the pond although it is unclear where this culvert drains to or from. Several inches of standing water were present in the portion of the wetland near the culvert.

The majority of Area O1 is vegetated with common reed and reed canary grass (*Phalaris arundinacea*), with sensitive fern, speckled alder, willow, and Asian bittersweet (*Celastrus orbiculatus*) located along the edge. Although Area O1 has wetland characteristics, it is not considered a jurisdictional wetland resource since it is a constructed stormwater treatment BMP.

Stormwater Treatment Pond O1

3.4 Wetland W1

Wetland W1 is located at the northern end of the project, on NHDOT-owned property (BMP Area G). It is classified as palustrine, emergent, persistent, seasonally flooded/saturated and palustrine, scrub-shrub, broad-leaved deciduous, seasonally flooded/saturated (PEM1E/PSS1E). The wetland generally has a distinct edge, a uniform shape, and is a wetland mitigation site (known as the Sullivan Site) constructed by NHDOT in 2011 and planted in 2012 as part of the wetland mitigation package associated with the Plaistow-Kingston project. It connects to a larger wetland adjacent to Bayberry Pond located west of the study area.

Vegetation within Wetland W1 includes willow (*Salix discolor*), speckled alder (*Alnus incana*), soft rush (*Juncus effusus*), common reed, purple loosestrife, and wool grass. The wetland had saturated soils at the time of the field review.

Wetland W1 was not previously delineated in 2018 since it was located beyond MJ's study area. It was delineated by GM2 in 2019.

Wetland W1

3.5 Wetland W2

Wetland W2 is located at the northern end of the project, on NHDOT-owned property (BMP Area G). The wetland is in a small forested area just north of an existing detention pond. Wetland W2 begins near a 15-inch culvert that connects to a wetland on the east side of NH Route 125. It then drains into Wetland W3 through an 18-inch culvert located under an access road constructed by NHDOT to access the existing BMP located on the NHDOT-owned property.

Wetland W2 is classified as palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E). It also has a small emergent area that is classified as palustrine, emergent, persistent, seasonally flooded/saturated (PEM1E). Vegetation within the forested portion of the wetland includes red maple, white oak (*Quercus alba*), highbush blueberry, cinnamon fern, dewberry (*Rubus hispidus*), royal fern, and poison ivy (*Toxicodendron radicans*). Vegetation within the emergent portion includes reed canary grass, purple loosestrife, cattail, and goldenrod species (*Solidago sp*.).

Wetland W2 has several drainage ditches that had an inch or less of standing or flowing water at the time of the field review. These drainages did not have stream characteristics (defined bed/bank and stream substrate) and were therefore not delineated as streams.

Wetland W2 was not previously delineated in 2018 since it was located beyond MJ's study area. It was delineated by GM2 in 2019.

Forested portion of Wetland W2, showing standing water in drainage ditch

Emergent portion of Wetland W2

3.6 Wetland W3 and Intermittent Stream

Wetland W3 is located at the northern end of the project, on NHDOT-owned property (BMP Area G). It connects to Wetland W2 via an 18-inch culvert located under an access road constructed by NHDOT to access the existing BMP located on the NHDOT-owned property. An intermittent stream (delineated as "S1")

begins at the 18-inch culvert and flows through the wetland. Both the stream and wetland continue west beyond the study area and flow into a large wetland/pond complex.

Wetland W3 is classified as palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E). Vegetation includes red maple, white pine, eastern hemlock (*Tsuga canadensis*), common winterberry, cinnamon fern, sensitive fern, and horsetail (*Equisetum sp*.). The intermittent stream that flows through Wetland W3 is classified as riverine, intermittent, streambed (R4SB). The stream channel is approximately 2 to 3 feet wide and has banks that are approximately 1 to 4 feet tall. The substrate is a mix of sand, mud, and some cobbles. During the October 2019 field review, the stream had approximately 1 to 3 inches of water.

Wetland W3 and the intermittent stream were not previously delineated in 2018 since they were located beyond MJ's study area. They were delineated by GM2 in 2019.

Wetland W3

Intermittent stream in Wetland W3

3.7 Wetland W4

Wetland W4 is located at the northern end of the project, on NHDOT-owned property (BMP Area G). It connects to a detention pond to the north. The majority of the wetland is classified as palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E) but there is a small emergent area that is classified as palustrine, emergent, persistent, seasonally flooded/saturated (PEM1E). Vegetation within the forested portion includes red maple, ash (*Fraxinus sp*.), elm saplings (*Ulmus sp*.), sensitive fern, and cinnamon fern. Dominant vegetation within the emergent portion includes cattail and purple loosestrife.

Wetland W4 was not previously delineated in 2018 since it was located beyond MJ's study area. It was delineated by GM2 in 2019.

Wetland W4

3.8 Detention Pond

The detention pond located on the NHDOT property (BMP Area G) at the northern end of the project was not delineated since it is a constructed stormwater treatment pond. According to plans obtained from NHDOT, the pond was constructed around 2005. The pond is currently overgrown with herbaceous and shrub vegetation.

View toward detention pond from embankment next to NH Route 125

3.9 Wetland W5 and Intermittent Stream

Wetland W5 is located at the northern end of the project, west of NH Route 125 between Plaistow-Kingston Animal Medical Center and AJA Auto Repair (BMP Area F). The wetland is small and is located in a forested area between two culverts. A small intermittent stream channel flows through the wetland. The stream, which is classified as riverine, intermittent, streambed (R4SB), is approximately two feet wide with no defined banks. The substrate consists of sand, silt, and organic material. There was approximately two to three inches of flowing water at the time of the field review.

Wetland W5 is classified as palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated (PFO1E). Vegetation includes ash, elm, common winterberry, sensitive fern, poison ivy, and intermediate wood fern (*Dryopteris intermedia*). The wetland had saturated soils at the time of the field review.

Wetland W5 and the intermittent stream were not previously delineated in 2018 since they were located beyond MJ's study area. They were delineated by GM2 in 2019.

Wetland W5

Intermittent stream in Wetland W5

APPENDIX A

Wetland Delineation Maps

0DWFK %HORZ

0DWFK $EHYH

:HWODQGV ZLWKLQ %03 $UHDV $ ') DQG *0 $VVRFLDWHV ,QF LQ 2FWREHU :HWODQGV ZLWKLQ WKH UHPDLQGHU RI WKH SURMHFW FRUULGRU GHOLQHDWHG E\ 0F)DUODQG -RKQVRQ

/HJHQG

:HWODQGV 'HOLQHDWLRQ
3RWHQWLDO 6WRUPZDWHU %03 $UHDV
2YHUYLHZ 0DS

)HHW

3ODLVWRZ .LQJVWRQ (
1+ 5RXWH ,PSURYHPHQWV

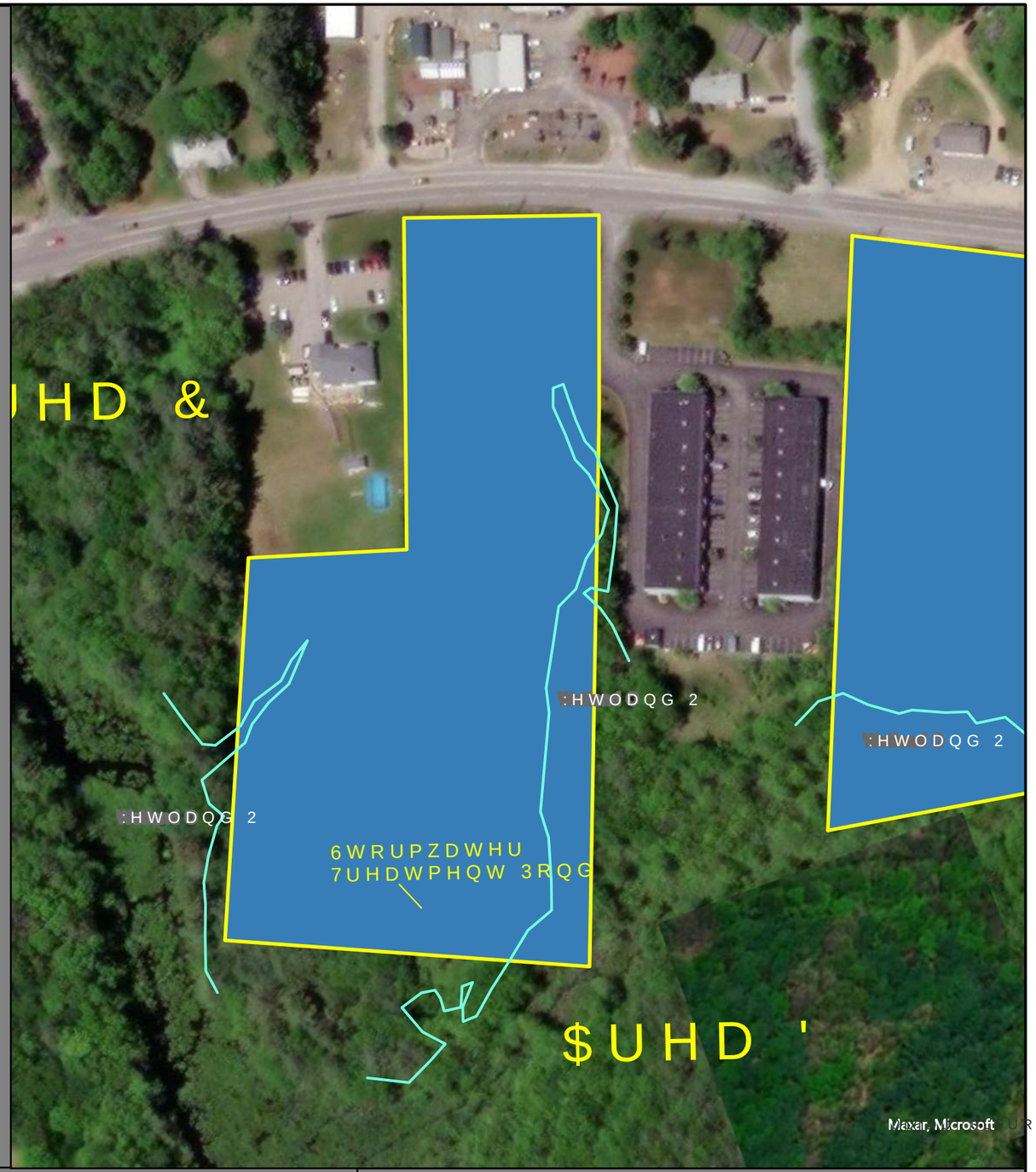
New Hampshire DOT Department of Transportation

5HYLVHG 1RY

:HWODQG %%%

:HWODQG '$

:HWODQG 2



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%03 $UHDV $ ' DQG '

)HHW

3ODLVWRZ .LQJVWRQ (
1+ 5RXWH ˇ ,PSURYHPHQWV

5HYLVHG 1RY

:HWODQG :ˇ
,QWHUPLWWHQW 6WUHDP

:HWODQG ::

:HWODQG 3

:HWODQG 4

$UHD *

:HWODQG :
,QWHUPLWWHQW
6WUHDP

:HWODQG :

'HWHQWLRQ
%DVLQ

:HWODQG :

:HWODQG :

0DS'DWD 0LFURVRIW

:HWODQG 'HOLQHDWLRQ
%03 $UHDV) DQG *

)HHW

3ODLVWRZ .LQJVWRQ (
1+ 5RXWH ˇ ,PSURYHPHQWV

New Hampshire DOT Department of Transportation

5HYLVHG 1RY

APPENDIX B

Wetland Delineation Field Data Forms

Wetland 13

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/9/19

Applicant/Owner: NHDOT State: NH Sampling Point: O up

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): terrace/fill Local relief (concave, convex, none): convex Slope (%): 5%

Subregion (LRR or MLRA): LRR R Lat: 42.868 N Long: 71.088 W Datum:

Soil Map Unit Name: 26A (Windsor loamy sand, 0-3%); 531B (Scio very fine sandy loam, 0-5%) NWI classification: Not mapped

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.)
Upland data point located near flag O-28

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:
No wetland hydrology indicators observed

Wetland 13

VEGETATION – Use scientific names of plants. Sampling Point: O up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Betula populifolia*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lonicera tatarica*	3	No	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	3	=Total Cover	
Herb Stratum (Plot size: 5')			
1. Unknown grasses	63	Yes	
2. *Solidago altissima*	38	Yes	FACU
3. *Securigera varia*	3	No	UPL
4. Unknown sedge	3	No	
5. *Euthamia graminifolia*	20	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	127	=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: 3 (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	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

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.)
No vegetation in woody vine stratum

Wetland 13

SOIL

Sampling Point: O up

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 3/3	100					Loamy/Clayey	sandy loam
8-12	10YR 3/4	90	10YR 3/1	5	C	M	Loamy/Clayey	Faint redox concentrations
			10YR 4/6	5	C	M		Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Wetland 13

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/9/19

Applicant/Owner: NHDOT State: NH Sampling Point: O wt

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): concave Slope (%): <5

Subregion (LRR or MLRA): LRR R Lat: 42.868 N Long: 71.088 W Datum:

Soil Map Unit Name: 295 (Freetown mucky peat, 0-2% slopes); 531B (Scio very fine sandy loam, 0-5%) 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:	Wetland O

Remarks: (Explain alternative procedures here or in a separate report.)
Data point located near flag O-28

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	No X	Depth (inches):

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

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

Remarks:

Wetland 13

VEGETATION – Use scientific names of plants. Sampling Point: O wt

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. *Alnus incana*	10	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	10 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Carex stricta*	20	Yes	OBL
2. *Lythrum salicaria*	3	No	OBL
3. *Solidago altissima*	3	No	FACU
4. *Calamagrostis canadensis ?*	38	Yes	OBL
5. *Carex sp.*	3	No	
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	67 =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	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

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.)
No vegetation in tree or woody vine strata

Wetland 13

SOIL

Sampling Point: O wt

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
0-12	10YR 2/1	98	10YR 3/4	2	C	PL	Loamy/Clayey	sandy loam with organics
12-16	2.5Y 5/1	90	2.5Y 5/4	10	C	M	Loamy/Clayey	Distinct redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W1 up

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10

Subregion (LRR or MLRA): LRR R Lat: 42.879 N Long: 71.084 W Datum:

Soil Map Unit Name: 43B - Canton fine sandy loam, 0-8% slopes, very stony NWI classification: Not mapped

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.)
upland data point located near flag W1-7

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: W1 up

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. *Betula populifolia*	3	No	FAC
2. *Salix discolor*	10	Yes	FACW
3. *Robinia pseudoacacia*	10	Yes	FACU
4.			
5.			
6.			
7.			
	23 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Solidago altissima*	63	Yes	FACU
2. *Artemisia vulgaris*	38	Yes	UPL
3. *Securigera varia*	3	No	
4. *Phalaris arundinacea*	38	Yes	FACW
5. *Lythrum salicaria*	3	No	OBL
6. *Euthamia graminifolia*	3	No	FAC
7.			
8.			
9.			
10.			
11.			
12.			
	148 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			FAC
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	3	x 1 =	3
FACW species	48	x 2 =	96
FAC species	6	x 3 =	18
FACU species	73	x 4 =	292
UPL species	38	x 5 =	190
Column Totals:	168 (A)		599 (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.)
No species in tree or vine strata

SOIL

Sampling Point: W1 up

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	10YR 3/2	98	10YR 6/3	2	D	M	Loamy/Clayey	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Rocks/gravel below 10 inches

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W1 wt

Investigator(s): Jenn Riordan Section, Township, Range:

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

Subregion (LRR or MLRA): LRR R Lat: 42.879 N Long: 71.084 W Datum:

Soil Map Unit Name: 43B - Canton fine sandy loam, 0-8% slopes, very stony NWI classification: Not mapped

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:	Wetland W1

Remarks: (Explain alternative procedures here or in a separate report.)
data point located near flag W1-7

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)
- 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 X	No	Depth (inches): 2

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: W1 wt

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. *Alnus incana*	20	Yes	FACW
2. *Salix discolor*	38	Yes	FACW
3. *Pinus strobus*	3	No	FACU
4. *Vaccinium corymbosum*	3	No	FACW
5.			
6.			
7.			
	64 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Phragmites australis*	10	Yes	FACW
2. *Lythrum salicaria*	10	Yes	OBL
3. *Juncus effusus*	38	Yes	
4. *Scirpus cyperinus*	10	Yes	OBL
5. *Eupatorium perfoliatum*	10	Yes	FACW
6. *Comptonia peregrina*	3	No	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	81 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			FAC
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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)
Prevalence Index = B/A =	

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.)
No species in tree or vine strata

SOIL

Sampling Point: W1 wt

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	sandy loam
8-12	10YR 3/1	90	10YR 5/4	10	C	M	Loamy/Clayey	sandy loam with gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W2 up

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 15

Subregion (LRR or MLRA): LRR R Lat: 42.879 N Long: 71.083 W Datum:

Soil Map Unit Name: 547B - Walpole very fine sandy loam, 3-8% slopes, very stony NWI classification: Not mapped

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.)
upland data point located near flag W2-22

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: W2 up

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. *Robinia pseudoacacia*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Robinia pseudoacacia*	3	No	FACU
2. *Phalaris arundinacea*	63	Yes	FACW
3. *Erechtites hieraciifolia*	10	No	FACU
4. *Solidago rugosa*	10	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	86 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			FAC
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	63	x 2 =	126
FAC species	10	x 3 =	30
FACU species	23	x 4 =	92
UPL species	0	x 5 =	0
Column Totals:	96 (A)		248 (B)

Prevalence Index = B/A = 2.58

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.)
No species in tree or vine strata

SOIL

Sampling Point: W2 up

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	50					Loamy/Clayey	sandy loam
	10YR 4/4	50						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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:

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Rocks/gravel below 6 inches

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W2 wt

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): <5

Subregion (LRR or MLRA): LRR R Lat: 42.879 N Long: 71.083 W Datum:

Soil Map Unit Name: 547B - Walpole very fine sandy loam, 3-8% slopes, very stony NWI classification: Not mapped

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:	Wetland W2

Remarks: (Explain alternative procedures here or in a separate report.)
data point located near flag W2-22

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)
- 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 X	No	Depth (inches): surface

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: W2 wt

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. *Salix discolor*	20	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	20 =Total Cover		
Herb Stratum (Plot size: 5')			
1. *Typha latifolia*	10	No	OBL
2. *Lythrum salicaria*	20	No	OBL
3. *Phalaris arundinacea*	63	Yes	FACW
4. *Solidago sp.*	3	No	
5. *Euthamia graminifolia*	10	No	FAC
6. *Securigera varia*	3	No	UPL
7.			
8.			
9.			
10.			
11.			
12.			
	109 =Total Cover		
Woody Vine Stratum (Plot size: 30')			
1.			FAC
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	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

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.)
No species in tree or vine strata

SOIL

Sampling Point: W2 wt

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 3/1	90	7.5YR 3/4	10	C	M	Loamy/Clayey	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Rocks/gravel below 6 inches

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W3 up

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR or MLRA): LRR R Lat: 42.878 N Long: 71.084 W Datum:

Soil Map Unit Name: 547B (Walpole very fine sandy loam, 3-8% slopes, very stony) NWI classification: Not mapped

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.)
Upland data point located near flag W3-8A

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: W3 up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	63	Yes	FACU
2. *Acer rubrum*	10	No	FAC
3.			
4.			
5.			
6.			
7.			
	73	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Vaccinium corymbosum*	20	Yes	FACW
2. *Corylus cornuta*	10	Yes	FACU
3. *Acer saccharum*	3	No	FACU
4.			
5.			
6.			
7.			
	33	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Mitchella repens*	20	Yes	FACU
2. Unknown fern (dry)	10	Yes	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Smilax rotundifolia*	10	Yes	FAC
2.			
3.			
4.			
	10	=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	20	x 2 =	40
FAC species	20	x 3 =	60
FACU species	96	x 4 =	384
UPL species	0	x 5 =	0
Column Totals:	136	(A)	484 (B)

Prevalence Index = B/A = 3.56

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: W3 up

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	sandy loam
8-12	10YR 4/6	100					Loamy/Clayey	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Soil rocky. Could not sample below 10 inches.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W3 wt

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR or MLRA): LRR R Lat: 42.878 N Long: 71.084 W Datum:

Soil Map Unit Name: 547B (Walpole very fine sandy loam, 3-8% slopes, very stony) NWI classification: Not mapped

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:	Wetland W3

Remarks: (Explain alternative procedures here or in a separate report.)
Data point located near flag W3-7A

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)
- X 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** X **No**

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

Remarks:
Wetland located adjacent to intermittent stream

VEGETATION – Use scientific names of plants. Sampling Point: W3 wt

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	38	Yes	FAC
2. *Pinus strobus*	38	Yes	FACU
3. *Tsuga canadensis*	20	Yes	FACU
4. *Betula populifolia*	3	No	FAC
5.			
6.			
7.			
	99	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ilex verticillata*	20	Yes	FACW
2. *Vaccinium corymbosum*	3	No	FACW
3. *Carya ovata*	10	Yes	FACU
4. *Quercus rubra*	10	Yes	FACU
5.			
6.			
7.			
	43	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Osmundastrum cinnamomeum*	63	Yes	FACW
2. *Athyrium angustum ?*	10	No	FAC
3. *Brachyelytrum erectum ?*	3	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	76	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Celastrus orbiculatus*	3	No	UPL
2.			
3.			
4.			
	3	=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: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.9% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	86	x 2 =	172
FAC species	51	x 3 =	153
FACU species	81	x 4 =	324
UPL species	3	x 5 =	15
Column Totals:	221 (A)		664 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 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: W3 wt

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 2/1	100					Loamy/Clayey	sandy loam
8-10	10YR 4/1	60	10YR 5/1	40	D	M	Loamy/Clayey	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Soil rocky. Could not sample below 10 inches.

Wetland 20

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W4 up

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 5

Subregion (LRR or MLRA): LRR R Lat: 42.878 Long: 71.084 Datum:

Soil Map Unit Name: 547B (Walpole very fine sandy loam, 3-8% slopes, very stony) NWI classification: Not mapped

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.)
Upland data point located west of Wetland W4, near flag W4-19

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:

Wetland 20

VEGETATION – Use scientific names of plants. Sampling Point: W4 up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus alba*	38	Yes	FACU
2. *Acer rubrum*	10	No	FAC
3. *Quercus rubra*	38	Yes	FACU
4. *Acer saccharum*	10	No	FACU
5. *Pinus strobus*	10	No	FACU
6.			
7.			
	106	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Hamamelis virginiana*	63	Yes	FACU
2. *Vaccinium corymbosum*	3	No	FACW
3. *Acer saccharum*	10	No	FACU
4.			
5.			
6.			
7.			
	76	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Toxicodendron radicans*	3	No	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	3	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Toxicodendron radicans*	3	No	FAC
2.			
3.			
4.			
	3	=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: 3 (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	16	x 3 =	48
FACU species	169	x 4 =	676
UPL species	0	x 5 =	0
Column Totals:	188 (A)		730 (B)

Prevalence Index = B/A = 3.88

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.)

Wetland 20

SOIL

Sampling Point: W4 up

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 2/2	100					Loamy/Clayey	sandy loam
8-12	10YR 5/6	100					Loamy/Clayey	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Wetland 20

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/15/19

Applicant/Owner: NHDOT State: NH Sampling Point: W4 wt

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): <5

Subregion (LRR or MLRA): LRR R Lat: 42.878 Long: 71.084 Datum:

Soil Map Unit Name: 547B (Walpole very fine sandy loam, 3-8% slopes, very stony) NWI classification: Not mapped

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:	Wetland W4

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)
- X 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 ____	No X	Depth (inches): ____

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

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

Remarks:

Wetland 20

VEGETATION – Use scientific names of plants. Sampling Point: W4 wt

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	63	Yes	FAC
2. *Fraxinus sp.*	10	No	
3.			
4.			
5.			
6.			
7.			
	73	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ulmus americana*	38	Yes	FACW
2. *Viburnum lentago*	3	No	FAC
3.			
4.			
5.			
6.			
7.			
	41	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Osmundastrum cinnamomeum*	20	Yes	FACW
2. *Osmunda spectabilis*	10	No	OBL
3. *Onoclea sensibilis*	38	Yes	FACW
4. *Toxicodendron radicans*	3	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	71	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Celastrus orbiculatus*	3	Yes	FAC
2. *Toxicodendron radicans*	3	Yes	FAC
3.			
4.			
	6	=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	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

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.)
Herbaceous species are starting to dry up - covers are estimated

Wetland 20

SOIL

Sampling Point: W4 wt

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 2/1	100					Loamy/Clayey	sandy clay loam
6-12	10YR 2/1	90	10YR 4/4	10	C	M	Loamy/Clayey	sandy clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/18/19

Applicant/Owner: NHDOT State: NH Sampling Point: W5 up

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR or MLRA): LRR R Lat: 42.876 N Long: 71.084 W Datum:

Soil Map Unit Name: 43B - Canton fine sandy loam, 0-8% slopes, very stony NWI classification: Not mapped

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.)
upland data point located near flag W5-8

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: W5 up

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	38	Yes	FACU
2. *Quercus alba*	20	Yes	FACU
3. *Acer rubrum*	20	Yes	FAC
4.			
5.			
6.			
7.			
	78	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Lindera benzoin*	20	Yes	FACW
2. *Amelanchier canadensis*	10	Yes	FAC
3. *Viburnum acerifolium*	10	Yes	UPL
4.			
5.			
6.			
7.			
	40	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Lindera benzoin*	3	Yes	FACW
2. *Toxicodendron radicans*	3	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	6	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Toxicodendron radicans*	3	No	FAC
2.			
3.			
4.			
	3	=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: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 62.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

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: W5 up

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 3/2	100					Loamy/Clayey	sandy loam
2-12	10YR 3/4	100					Loamy/Clayey	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Plaistow-Kingston 10044E City/County: Kingston / Rockingham Sampling Date: 10/18/19

Applicant/Owner: NHDOT State: NH Sampling Point: W5 wt

Investigator(s): Jenn Riordan Section, Township, Range:

Landform (hillside, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR or MLRA): LRR R Lat: 42.876 N Long: 71.084 W Datum:

Soil Map Unit Name: 43B - Canton fine sandy loam, 0-8% slopes, very stony NWI classification: Not mapped

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:	Wetland W5

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)
- 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 X	No	Depth (inches): 2

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

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

Remarks:
Wetland located adjacent to intermittent stream

VEGETATION – Use scientific names of plants. Sampling Point: W5 wt

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus sp.*	38	Yes	
2. *Ulmus sp.*	38	Yes	
3. *Betula populifolia*	3	No	FAC
4.			
5.			
6.			
7.			
	79	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Ilex verticillata*	38	Yes	FACW
2. *Euonymus alatus*	10	No	UPL
3. *Lindera benzoin*	10	No	FACW
4.			
5.			
6.			
7.			
	58	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Onoclea sensibilis*	10	Yes	FACW
2. *Impatiens capensis*	3	No	FACW
3. *Athyrium angustum ?*	10	Yes	FAC
4. *Toxicodendron radicans*	10	Yes	FAC
5. *Dryopteris intermedia*	10	Yes	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	43	=Total Cover	
Woody Vine Stratum (Plot size: 30')			
1. *Toxicodendron radicans*	3	No	FAC
2.			
3.			
4.			
	3	=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	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

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.)
Herbaceous layer mostly dead/dry

SOIL

Sampling Point: W5 wt

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 2/2	100					Loamy/Clayey	sandy loam with organic
6-12	10YR 3/1	95	10YR 3/6	5	C	M	Loamy/Clayey	sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated 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)
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- ___ Stripped Matrix (S6)
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- ___ 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 (TF12)
- ___ 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 reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Photo 1
Wetland 1
(Impact Area A)
View west

Photo 2
Wetland 3
(Impact Area C)
View west

Photo 3
Wetland 4
(Impact Area D2)
View northwest

Photo 4
Wetland 5
(Impact Area E)
View north

Photo 5
Wetland 9
(Little River east of
NH Route 125)
View northeast

Photo 6
Little River
Wetland 9
(Impact Area L)
R2UBH
View west

Photo 7
Wetlands 9 and 10
(Impact Areas L, M, and P)
View southwest

Photo 8
Wetland 13
(Impact Area Q)
View south

Photo 9
Wetland 14
(Impact Area T)
View north

Photo 10
Wetland 15
(Impact Area V)
View north

Photo 11
Wetland 16
(Impact Area X)
View east

Photo 12
Wetland 17
(Impact Area Y)
View northwest

Photo 13
Wetland 18
(Impact Area AA)
View northeast

Construction Sequence

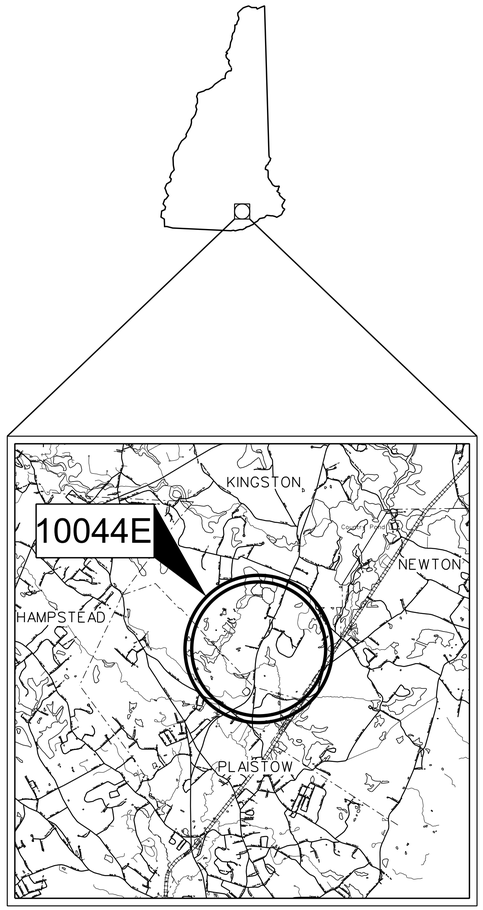
1. Install perimeter controls
2. Perform necessary clearing operations
3. Shift traffic to west side of existing NH Route 125 and construct temporary widening on the east side of NH Route 125.
4. Shift traffic to the temporary widening and construct the west side of the proposed NH Route 125.
5. Shift traffic to the proposed west side of NH Route 125 and construct the east side of the proposed NH Route 125.
6. Conduct final stabilization of disturbed areas
7. Remove perimeter controls

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS
FEDERAL AID PROJECT

X-A000(378)
NH PROJECT NO. 10044E
NH ROUTE 125

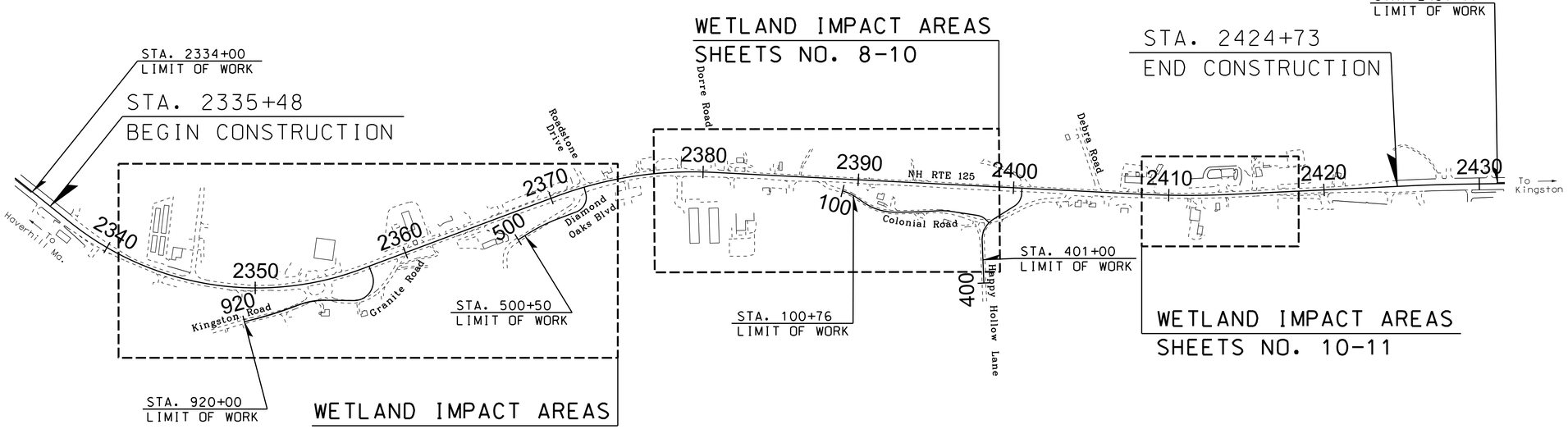
DESIGN DATA	
AVERAGE DAILY TRAFFIC 20 18	12,527
AVERAGE DAILY TRAFFIC 20 46	16,569
PERCENT OF TRUCKS	10%
DESIGN SPEED	45 MPH
LENGTH OF PROJECT	1.84 MILES



LOCATION MAP

1 1/2 0 1 2 mi.

GRAPHIC SCALE



INDEX OF SHEETS

DRAWN BY E. ROLSER DATE 01/2020
CHECKED BY S. HILL DATE 01/2020

TOWNS OF PLAISTOW AND KINGSTON

COUNTY OF ROCKINGHAM

SCALE: 1" = 400'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

STATE OF NEW HAMPSHIRE
8-7-2023
DAMIEN L BLOOD
No. 9596
LICENSED PROFESSIONAL ENGINEER

STATE OF NEW HAMPSHIRE
Jennifer Riordan
3/7/23
No. 269
CERTIFIED WETLAND SCIENTIST

GM2

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

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

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
X-A000(378)	10044E	1	29

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 — 291

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

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	STDSYMB 1	10044E	2	29

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

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 — 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	STDSYMB 2	10044E	3	29

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASS-IFICATION	LOCATION	AREA IMPACTS				LINEAR STREAM IMPACTS			LINEAR STREAM IMPACTS		
			PERMANENT		TEMPORARY		PERMANENT			TEMPORARY		
			N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)	N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)	BANK LEFT	BANK RIGHT	CHANNEL	BANK LEFT	BANK RIGHT	CHANNEL
			SF	SF	SF	SF	LF	LF	LF	LF	LF	LF
1	PEM1E	A		4								
10A	BANK	B	3		40			6			9	
3	PFO1E	C		797								
4	PFO1E	D1		606								
4	PFO1E	D2		1227								
5	PFO1E	E		5661		517						
5	PFO1E	F		34								
5	PFO1E	G		99								
5	PFO1E	H		1								
5	PFO1E	I		433								
6	PFO1E	J		80								
9	R2UBH	L		63		289			5			8
10	PEM1C	M		17		117						
10	PFO1E	N		2473		480						
10	PFO1E	O		1								
10A	BANK	P	1		16		18			4		
13	PFO1E	Q		182								
13	PFO1E	S		470								
14	PFO1E	T		736								
13	PFO1E	U		314								
15	PFO1E	V		982								
16	PFO1E	W				7						
16	PFO1E	X		884		38						
17	PFO1E	Y		256								
18	PFO1E/PSS1E	Z		3								
18	PFO1E/PSS1E	AA		50		331						
20	PFO1E	CC		36								
		TOTAL	4	15409	56	1779	18	6	5	4	9	8

PERMANENT IMPACTS: 15413 SF
TEMPORARY IMPACTS: 1835 SF
TOTAL IMPACTS: 17248 SF

PERMANENT STREAM IMPACTS: 29 LF
TEMPORARY STREAM IMPACTS: 21 LF
TOTAL STREAM IMPACTS: 50 LF

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

WETLAND CLASSIFICATION CODES	
PEM1C	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED
PEM1E	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED/SATURATED
PFO1E	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
PSS1E	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
R2UBH	RIVERINE, LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, PERMANENTLY FLOODED
R4SB	RIVERINE, INTERMITTENT, STREAMBED

WETLAND DELINEATIONS COMPLETED BY STEPHEN HOFFMAN (CWS #306) OF McFARLAND-JOHNSON, INC IN JUNE AND JULY OF 2018 AND JENNIFER RIORDAN (CWS # 269) OF GM2 ASSOCIATES, INC IN OCTOBER 2019, JUNE 2020, AND OCTOBER 2022. THE DELINEATION WAS COMPLETED IN ACCORDANCE WITH THE US ARMY CORPS OF ENGINEERS (ACOE) 1987 METHODOLOGY AND THE ACOE NORTHCENTRAL AND NORTHEAST REGIONAL SUPPLEMENT (2012).

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT SUMMARY

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWTSUM	10044E	4	29

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

STA. 2334+00
LIMIT OF WORK

STA. 2335+48
BEGIN CONSTRUCTION

PC 2337+11.30

NH RTE 125

1 GRANVILLE REALTY ASSOCIATES

2 THE NEALE REALTY TRUST

3 CHAYA BROTHERS REALTY, LLC

4 PPR REALTY TRUST

5 PPR REALTY TRUST

6 HORIZON REALTY ASSOCIATES

8 NICKY REALTY TRUST AND GREGOIRE, RICHARD & SUE E.

10 PANNIELLO PLAISTOW 216 REALTY TRUST

11 PANNIELLO PLAISTOW 216 REALTY TRUST

PLAIS REAI

1 PSS/PF01E

1 PEM1E

A

wet area

MATCH TO SHEET 10044EPWT02

GRID N

50 0 50 100
SCALE IN FEET

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT01	10044E	5	29

MATCH TO SHEET 10044EPWT01

MATCH TO 10044EPWT03

GRID N

12
PANNIELLO PLAISTOW
214 REALTY TRUST

13
DBH REALTY OF PLAISTOW, LLC.

14
DICK, ALVIN W.
& GLADYS I.

15
BOWEN, JOHN H.
& CHERI L.

16
MCCUSKER, JAMES M. JR.
& CATHERINE A.

17
TASBAK, LLC

18
STEPHEN R. THOMAS AND
JUDITH R. THOMAS
REVOCABLE TRU
& LORI E. T
REVOCABL

19
STATE OF NH
DOT

Kingston Road

Granite Road

PLAISTOW
KINGSTON
TOWN LINE

DRAINAGE EASEMENT

C
3 PFO1E
D1
4 PFO1E
D2
6 PFO1E
5 PFO1E
I
H
J
F
G
E

PC 920+68.91
PRC 923+53.91
PT 925+43.92
PT 929+66.50
PC 927+23.07
PT 2356+96.30

2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359
920 921 922 923 924 925 926 927 928 929 930

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION
		STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT02	10044E	6	29

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023

AS BUILT DETAILS DATE

GRID N

MATCH TO 10044EPWT02

MATCH TO 10044EPWT04

20 JEFF-RE REALTY TRUST

24 RAMEY, WADIH

25 DAHER MOTORS OF KINGSTON, INC.

26 DAHER MOTORS OF KINGSTON, INC.

28 BREMAN TRUST

Roadstone Drive

Little River

7 PEM1C

8 R2UBH

NH RTE 125

2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373

PC 2370+36.81

PT 505+61.50

505 504 503 502 501 500

B DRAINAGE EASEMENT

L

P

M

N

O

10 PFO1E

10 PEM1C

10A BANK

9 R2UBH

12 DRAINAGE EASEMENT PFO1E

11 R2UBH

24-1 RAMEY, WADIH

22 R & G REALTY TRUST

23-LU3 DIAMOND OAKS GOLF CLUB, LLC & VILLAGE AT GRANITE FIELDS CONDOMINIUM

23-LU2 D AND M HOLDINGS, LLC & VILLAGE AT GRANITE FIELDS CONDOMINIUM

21 ALLEN, STEVEN B.

29 MASSAPAUG REALTY TRUST

23-LU1 TEATAD LLC & VILLAGE AT GRANITE FIELDS CONDOMINIUM

Diamond Oaks Blvd

PC 504+15.44

PT 502+76.77

PC 500+90.85

50 0 50 100

SCALE IN FEET

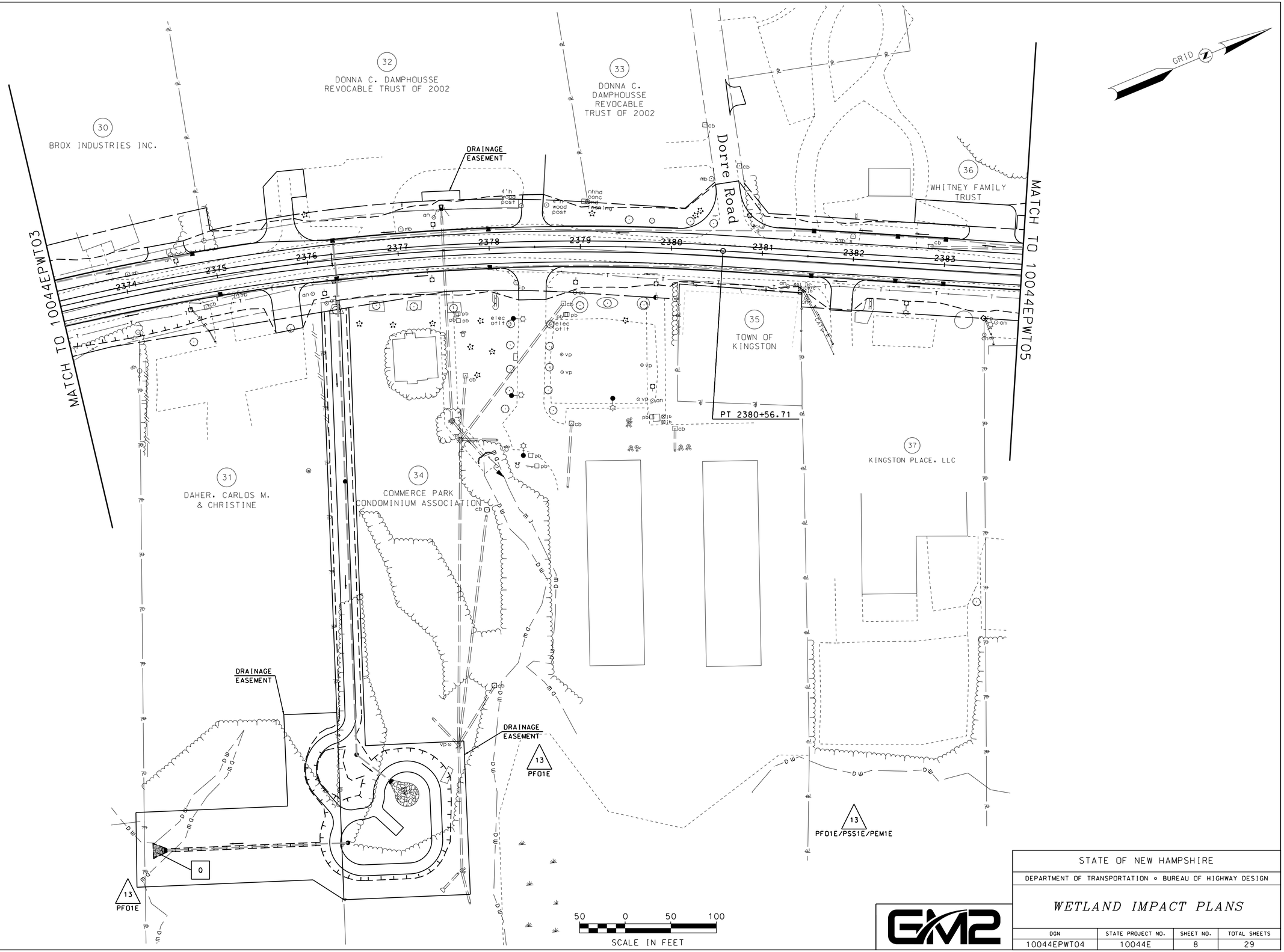
GM2

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT03	10044E	7	29



REVISIONS AFTER PROPOSAL			
DESCRIPTION	STATION	DATE	NUMBER

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT04	10044E	8	29

GRID N

MATCH TO 10044EPWT04

MATCH TO 10044EPWT06

39 JASON THOMAS WHITNEY LIVING TRUST

38 SARCASM LLC

40 BURTT, IRENE M.

41 STATE OF NH (DOT)

42 STATE OF NH (DOT)

43 FIELDSTONE MEADOW REALTY LLC

44 PHYLLIS L. CROWELL IP REVOCABLE TRUST OF 2000

45 JANUSZEWSKI, ROBYN A.

46 CARA MARIA REALTY TRUST

47 SALINAS MARC R. KATHERINE

NH RTE 125

Colonial Road

DRAINAGE EASEMENT

SLOPE EASEMENT

PT 100+91.29

PC 101+60.85

PRC 106+45.62

PT 107+36.10

PCC 103+70.28

13 PFO1E/PSS1E/PEM1E

13 PFO1E

14 PFO1E

SCALE IN FEET 50 0 50 100

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION
		STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT05	10044E	9	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION
		STATION
		STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

MATCH TO 10044EPWT05

MATCH TO 10044EPWT07

GRID

Debra Road

Colonial Road

Happy Hollow Ln

51 COMCAST OF CONNECTICUT/ GEORGIA/MASSACHUSETTS/ NEW HAMPSHIRE/ NEW YORK/ NORTH CAROLINA/ VIRGINIA/VERMONT LLC

43 FIELDSTONE MEADOW REALTY LLC

52 STATE OF NH (DOT)

56 STATE OF NH (DOT)

57 GEOFFROY ROUTE 125 REALTY TRUST

50 TOWN OF KINGSTON

DRAINAGE EASEMENT

54 YOUNG, ROGER S.

53 KINNEY, WAYNE E.

55 JOHN D. LANCASTER REVOCABLE TRUST

58 CB2 REALTY LLC

49 LAURENCE F. RADFORD, SR. AND MADELINE K. RADFORD IRREVOCABLE TRUST

8 CLEGG, III ,BLE TRUST

PC 109+02.66

PT 109+65.31

PC 402+73.93

PT 404+35.66

PC 405+95.91

PT 406+91.78

PC 2408+16.59

2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409

400 401 402 403 404 405 406

PF01E

SCALE IN FEET 50 0 50 100

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

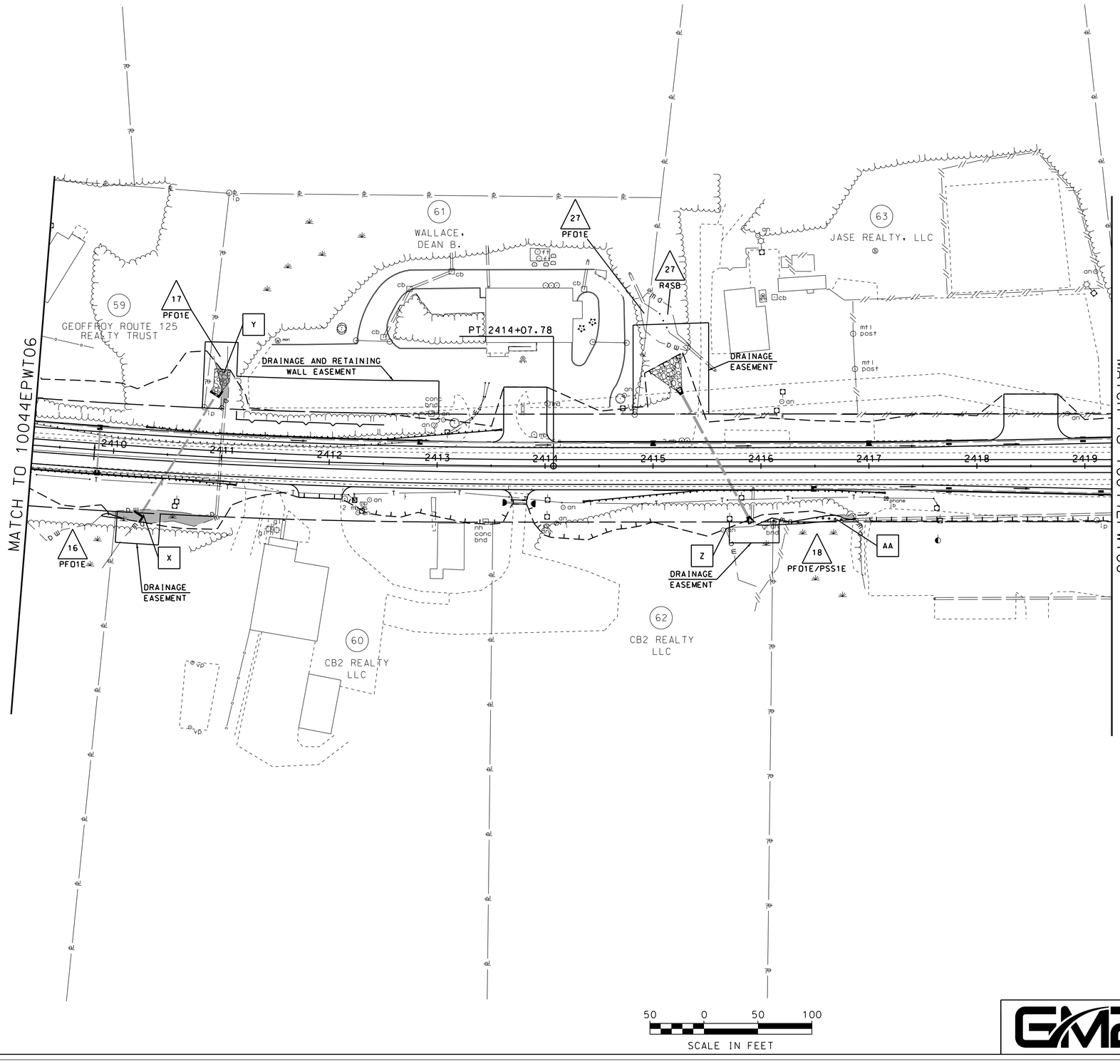
WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT06	10044E	10	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE



STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT07	10044E	11	29

GRID
STA. 2424+73
END CONSTRUCTION
STA. 2431+18
LIMIT OF WORK
25
PEM1E/PSS1E
23
PFO1E
24
R4SB
22
PFO1E
21
PEM1E
20
PFO1E
19
PEM1E
CC
NON-JURISDICTIONAL WETLAND
(STORMWATER DETENTION BASIN)
66
MATHEWS, GARY
MATHEWS, ROBERT G.
MATHEWS, RICHARD J., JR.
& ANDREWS, JOYCE
65
PITTORE,
ALFRED
67
STATE
OF NH
(DOT)
68
STATE
OF NH
(DOT)
70
ROUTE 125 COMMERCIAL
CENTER CONDOMINIUM
ASSOCIATION
PC 2432+12.20
MATCH TO 10044EPWT07
NH RTE 125
2420
2421
2422
2423
2424
2425
2426
2427
2428
2429
2430
2431
2432
2433
64
-1
STATE
OF NH
(DOT)
64
TASBAK, LLC.
PC 2425+91.35
69
PATRIOT PARK
CONDOMINIUM
PT 2428+54.93
71
HT PROPERTIES,
LLC
N/F
GIANOPOULOS,
WILLIAM &
CYNTHIA
N/F
DOIRON, ROBIN
50
0
50
100
SCALE IN FEET

REVISIONS AFTER PROPOSAL				
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

GM2

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EPWT08	10044E	12	29

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.

STATE OF NEW HAMPSHIRE
PLAISTOW & KINGSTON
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL STRATEGIES

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	erosstrat	10044E	13	29

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

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

STA. 2334+00
LIMIT OF WORK

STA. 2335+48
BEGIN CONSTRUCTION

MATCH TO SHEET 10044EEROC02

GRID N

1 GRANVILLE REALTY ASSOCIATES

2 THE NEALE REALTY TRUST

3 CHAYA BROTHERS REALTY, LLC

4 PPR REALTY TRUST

5 PPR REALTY TRUST

6 HORIZON REALTY ASSOCIATES

8 NICKY REALTY TRUST AND GREGOIRE, RICHARD & SUE E.

9 PLAISTOW STORAGE REALTY TRUST

10 PANNIELLO PLAISTOW 216 REALTY TRUST

11 PANNIELLO PLAISTOW 216 REALTY TRUST

drive access to parcel 12 across parcel 1 See Recorded Plan D35334

NH RTE 125

EXIST. C.A.R.O.W.

C.A.R.O.W.

EAST C.A.R.O.W.

PSS/PFO1E

PEM1E

A

2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC01	10044E	14	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED E. ROLSER DATE 3/7/2023
NEW DESIGN S. HILL DATE 3/7/2023
SHEET CHECKED J. MERCER DATE 3/7/2023

AS BUILT DETAILS DATE

MATCH TO SHEET 10044EEROC01

MATCH TO 10044EEROC03

GRID N

12 PANNIELLO PLAISTOW 214 REALTY TRUST

13 DBH REALTY OF PLAISTOW, LLC.

14 DICK, ALVIN W. & GLADYS I.

15 BOWEN, JOHN H. & CHERI L.

16 MCCUSKER, JAMES M. JR. & CATHERINE A.

17 TASBAK, LLC

18 STEPHEN R. THOMAS AND JUDITH R. THOMAS REVOCABLE TRUST & LORI E. THOMAS REVOCABLE TRUST

Kingston Road

Granite Road

TOWN LINE PLAISTOW KINGSTON

DRAINAGE EASEMENT

C.A.R.O.W.

L.A.R.O.W.

C

D1

D2

E

F

G

H

I

J

3 PF01E

4 PF01E

5 PF01E

6 PF01E

50 0 50 100
SCALE IN FEET

GM2

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

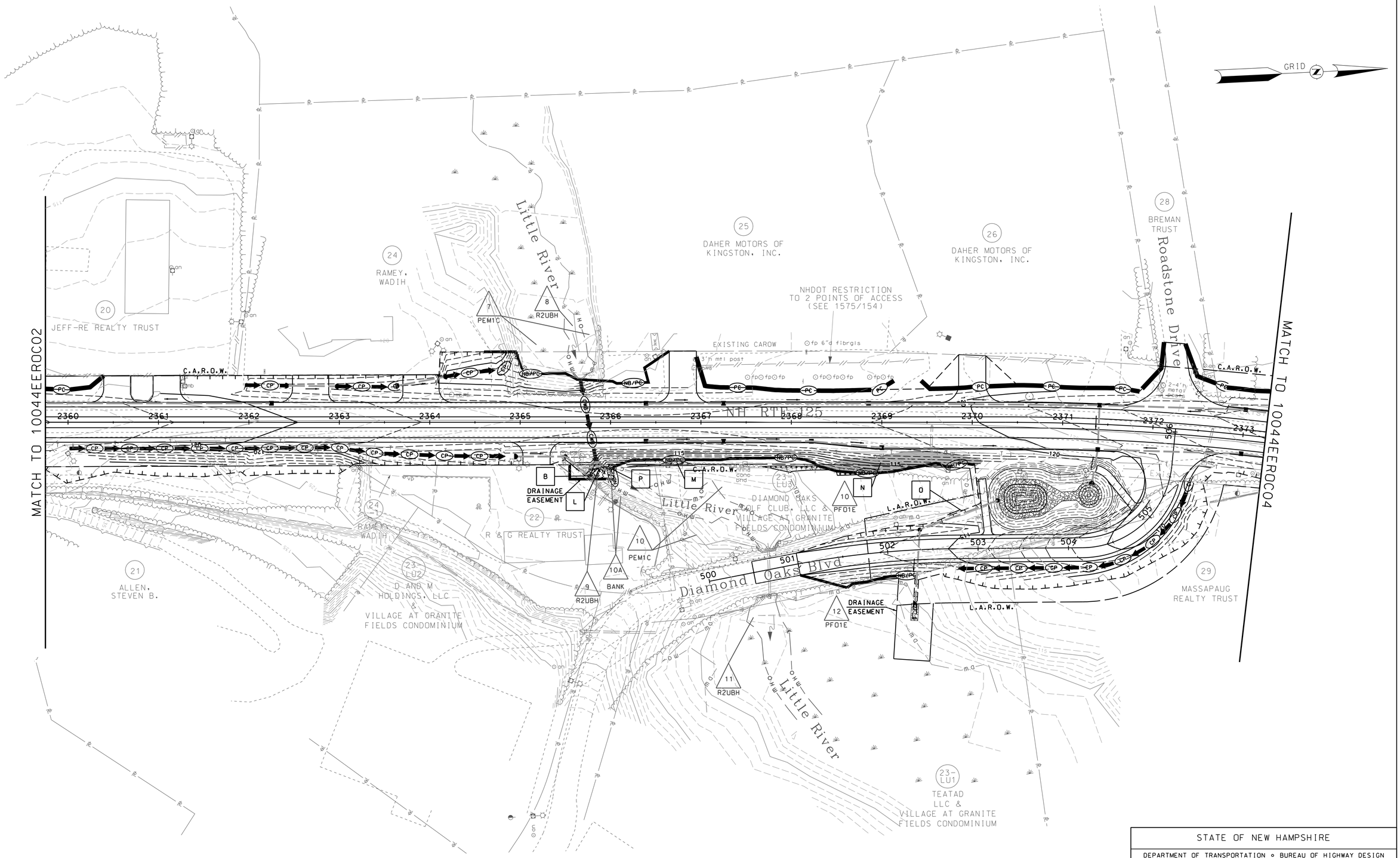
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC02	10044E	15	29

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023

AS BUILT DETAILS DATE



STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC03	10044E	16	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023

AS BUILT DETAILS DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC04	10044E	17	29

GRID

MATCH TO 10044EEROC04

MATCH TO 10044EEROC06

DRAINAGE EASEMENT

SLOPE EASEMENT

39
JASON THOMAS WHITNEY LIVING TRUST

40
STATE OF NH (DOT)

41
STATE OF NH (DOT)

43
FIELDSTONE MEADOW REALTY LLC

44
PHYLLIS L. CROWELL IRREVOCABLE TRUST OF 2008

46
CARA MARIA REALTY TRUST

38
SARCASM LLC

40
BURTT, IRENE M.

45
JANUSZEWSKI, ROBYN A.

47
SALINAS, MARC R. & KATHERINE P.

Colonial Road

NH RTE 125

C.A.R.O.W.

L.A.R.O.W.

R.O.W.

T

U

S

14
PF01E

13
PF01E/PSS1E/PEM1E

13
PF01E

2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396

101 102 103 104 105 106 107

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL			
DESCRIPTION	STATION	NUMBER	DATE

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC05	10044E	18	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION
		STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

GRID N

MATCH TO 10044EEROC05

MATCH TO 10044EEROC07

43 FIELDSTONE MEADOW REALTY LLC

51 COMCAST OF CONNECTICUT/ GEORGIA/MASSACHUSETTS/ NEW HAMPSHIRE/ NEW YORK/ NORTH CAROLINA/ VIRGINIA/VERMONT LLC

52 STATE OF NH (DOT)

56 STATE OF NH (DOT)

57 GEOFFROY ROUTE 125 REALTY TRUST

Debra Road

2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409

C.A.R.O.W.

Exist R.O.W.

DRAINAGE EASEMENT

50 TOWN OF LINCOLN

Slightly Humid

Happy Hollow Trail

53 KINNEY, WAYNE E.

54 YOUNG, ROGER S.

55 JOHN D. LANCASTER REVOCABLE TRUST

58 CB2 REALTY LLC

49 LAURENCE F. RADFORD, SR. AND MADELINE K. RADFORD IRREVOCABLE TRUST

Approx. Exist R.O.W.

8 CLEGG, III BLE TRUST

PF01E

50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC06	10044E	19	29

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	STATION	DATE

SDR PROCESSED E. ROLSER DATE 3/7/2023
NEW DESIGN S. HILL DATE 3/7/2023
SHEET CHECKED J. MERCER DATE 3/7/2023

AS BUILT DETAILS DATE

GRID N

MATCH TO 10044EEROC06

MATCH TO 10044EEROC08

61 WALLACE, DEAN B.

63 JASE REALTY, LLC

59 GEOFFROY ROUTE 125 REALTY TRUST

60 CB2 REALTY LLC

62 CB2 REALTY LLC

17 PF01E

27 PF01E

27 R4SB

16 PF01E

18 PF01E/PSS1E

DRAINAGE AND RETAINING WALL EASEMENT

DRAINAGE EASEMENT

DRAINAGE EASEMENT

DRAINAGE EASEMENT

C.A.R.O.W.

C.A.R.O.W.

2410 2411 2412 2413 2414 2415 2416 2417 2418 2419

591

165

50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC07	10044E	20	29

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

MATCH TO 10044EEROC07

STA. 2424+73
END CONSTRUCTION

STA. 2431+18
LIMIT OF WORK

GRID

NON-JURISDICTIONAL WETLAND
(STORMWATER DETENTION BASIN)

19 PEM1E
20 PFO1E
21 PEM1E
22 PFO1E
23 PFO1E
24 R4SB
25 PEM1E/PSS1E

66 MATHEWS, GARY
MATHEWS, ROBERT G.
MATHEWS, RICHARD J., JR.
& ANDREWS, JOYCE

65 PITTORE, ALFRED

67 STATE OF NH (DOT)

68 STATE OF NH (DOT)

70 ROUTE 125 COMMERCIAL CENTER CONDOMINIUM ASSOCIATION

64 STATE OF NH (DOT)

64 TASBAK, LLC.

69 PATRIOT PARK CONDOMINIUM

71 HT PROPERTIES, LLC

N/F GIANOPOULOS, WILLIAM & CYNTHIA

N/F DOIRON, ROBIN

Approx. Exist. R.O.W.

Exist C.A.R.O.W.

NH RTE 125

(1 POINT OF ACCESS PROJECT 10044B)

(1 POINT OF ACCESS PROJECT 10044B)

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

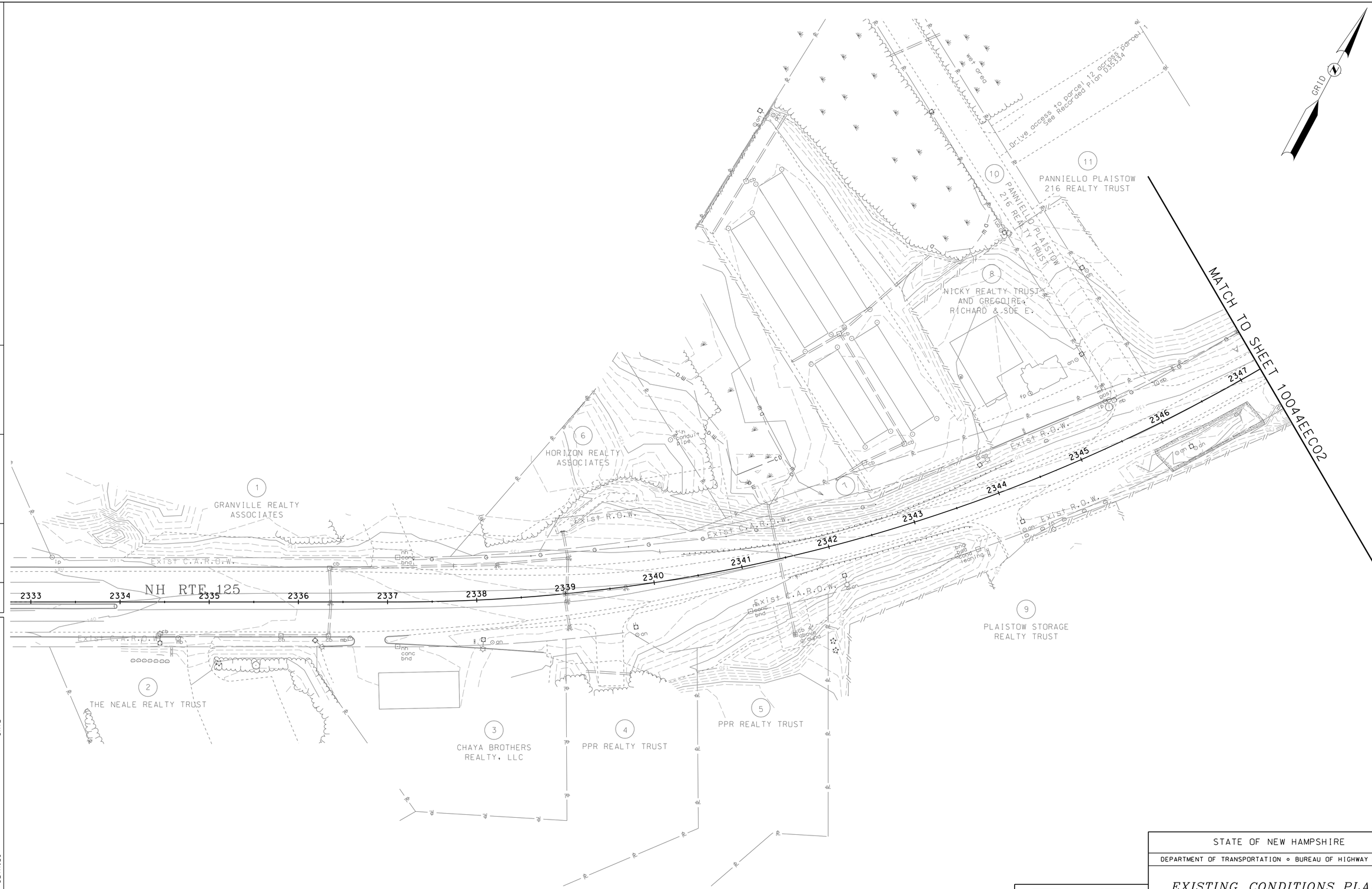
EROSION CONTROL PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEROC08	10044E	21	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE



STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC01	10044E	22	29

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

MATCH TO SHEET 10044EEC01

GRID N

12 PANNIELLO PLAISTOW 214 REALTY TRUST

13 DBH REALTY OF PLAISTOW, LLC.

TOWN LINE PLAISTOW KINGSTON

Approx. EXIST. R.O.W.

Kingston Road

Granite Road

14 DICK, ALVIN W. & GLADYS I.

15 BOWEN, JOHN H. & CHERI L.

16 MCCUSKER, JAMES M. JR. & CATHERINE A.

17 TASBAK, LLC

18 STEPHEN R. THOMAS AND JUDITH R. THOMAS REVOCABLE TRUST & LORI E. THOMAS REVOCABLE TRUST

19 STATE OF NH (DOT)

Approx. EXIST. R.O.W.

MATCH TO 10044EEC03

50 0 50 100

SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC02	10044E	23	29

MATCH TO 10044EEC02

MATCH TO 10044EEC04

NH RTE 125

Roadstone Drive

Diamond Oaks Blvd

Little River

Little River

Little River

EXISTING CAROW

NHDOT RESTRICTION
TO 2 POINTS OF ACCESS
(SEE 1575/154)

20
JEFF-RE REALTY TRUST

24
RAMEY,
WADIH

25
DAHER MOTORS OF
KINGSTON, INC.

26
DAHER MOTORS OF
KINGSTON, INC.

28
BREMAN
TRUST

24
RAMEY,
WADIH

22
R & G REALTY TRUST

23-LU2
D AND M
HOLDINGS, LLC
&
VILLAGE AT GRANITE
FIELDS CONDOMINIUM

23-LU3
DIAMOND OAKS
GOLF CLUB, LLC &
VILLAGE AT GRANITE
FIELDS CONDOMINIUM

27
STATE
OF NH
(DOT)

21
ALLEN,
STEVEN B.

29
MASSAPAUG
REALTY TRUST

23-LU1
TEATAD
LLC &
VILLAGE AT GRANITE
FIELDS CONDOMINIUM

GRID N

SCALE IN FEET
50 0 50 100

REVISIONS AFTER PROPOSAL	NUMBER	DATE	STATION
DESCRIPTION			

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC03	10044E	24	29

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC04	10044E	25	29

GRID

MATCH TO 10044EEC04

MATCH TO 10044EEC06

39
JASON THOMAS WHITNEY
LIVING TRUST

41
STATE
OF NH
(DOT)

42
STATE
OF NH
(DOT)

43
FIELDSTONE MEADOW
REALTY LLC

EXIST. R.O.W.

2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396

NH RTE 125

EXIST. R.O.W.

44
PHYLLIS L. CROWELL IP
REVOCABLE TRUST OF 2008

46
CARA MARIA
REALTY TRUST

100 101 102 103 104 105 106 107

Colonial Road

Approx. EXIST. R.O.W.

38
SARCASM
LLC

40
BURTT, IRENE M.

47
SALINAS
MARC R.
KATHERINE

45
JANUSZEWSKI,
ROBYN A.

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

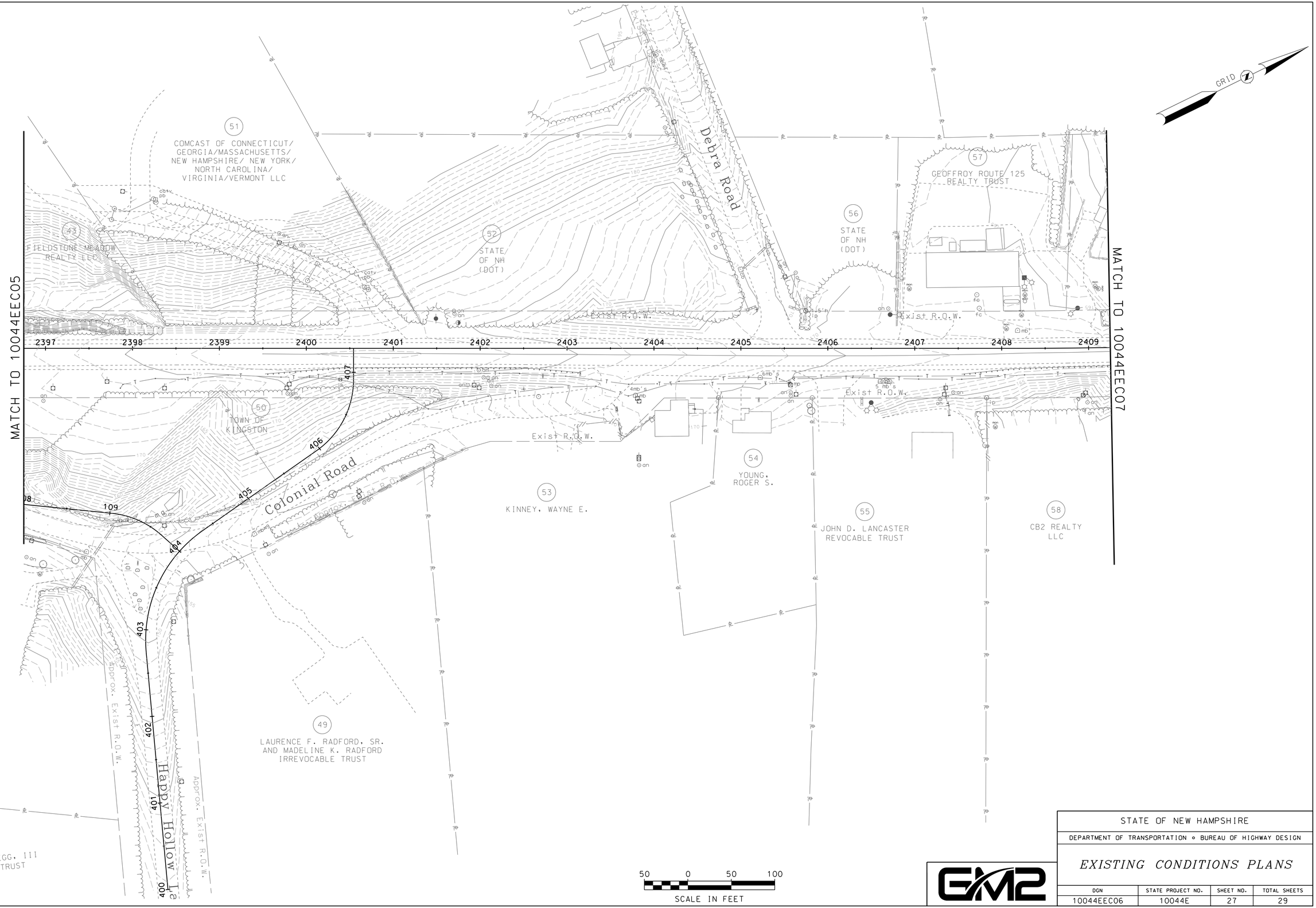
SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC05	10044E	26	29



REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC06	10044E	27	29

GRID N

MATCH TO 10044EEC06

MATCH TO 10044EEC08

61
WALLACE, DEAN B.

63
JASE REALTY, LLC

59
GEOFFROY ROUTE 125 REALTY TRUST

60
CB2 REALTY LLC

62
CB2 REALTY LLC

2410 2411 2412 2413 2414 2415 2416 2417 2418 2419

50 0 50 100
SCALE IN FEET

REVISIONS AFTER PROPOSAL

NUMBER	DATE	DESCRIPTION	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLAN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC07	10044E	28	29

REVISIONS AFTER PROPOSAL

NUMBER	DESCRIPTION	DATE	STATION

SDR PROCESSED	E. ROLSER	DATE 3/7/2023
NEW DESIGN	S. HILL	DATE 3/7/2023
SHEET CHECKED	J. MERCER	DATE 3/7/2023
AS BUILT DETAILS		DATE

MATCH TO 10044EEC07

66
MATHEWS, GARY
MATHEWS, ROBERT G.
MATHEWS, RICHARD J., JR.
& ANDREWS, JOYCE

65
PITTORE,
ALFRED

67
STATE
OF NH
(DOT)

68
STATE
OF NH
(DOT)

70
ROUTE 125 COMMERCIAL
CENTER CONDOMINIUM
ASSOCIATION

Approx. Exist. R.O.W.

Exist R.O.W.

Exist C.A.R.O.W.

NH RTE 125

2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433

64
STATE
OF NH
(DOT)

71
HT PROPERTIES,
LLC

N/F
GIANOPOULOS,
WILLIAM &
CYNTHIA

64
TASBAK, LLC.

69
PATRIOT PARK
CONDOMINIUM

N/F
DOIRON, ROBIN

(1 POINT OF ACCESS
PROJECT 10044B)

(1 POINT OF ACCESS
PROJECT 10044B)

GRID N

50 0 50 100
SCALE IN FEET

STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EXISTING CONDITIONS PLANS

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
10044EEC08	10044E	29	29