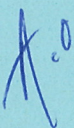


**STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION**

FROM:  Andrew O'Sullivan
Wetlands Program Manager

DATE: December 6, 2019

AT (OFFICE): Department of
Transportation

SUBJECT: Dredge & Fill Application
Hinsdale-Brattleboro, 12210C

Bureau of
Environment

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 Bridge Design for the subject Major impact project. This project is classified as Major per Env-Wt 303.02(i). The project is located on NH Route 119 in the Town of Hinsdale, NH. The proposed work consists of the construction of a new bridge to carry NH Route 119 over the Connecticut River.

This project was reviewed at the Natural Resource Agency Coordination Meeting on November 21, 2018. 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>

Mitigation is required for the project as there are permanent impacts to bank, channel, and wetlands associated with the construction of the new bridge. An in-lieu fee payment of \$151,049.28 will be made to the NHDES ARM fund.

The lead people to contact for this project are Donald Lyford, Project Manager, Bureau of Highway Design (271-2165 or donald.lyford@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or andrew.o'sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher # 590911) in the amount of \$30,000.

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

AMO:amo
Enclosures

cc:
BOE Original
Town of Hinsdale (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Bureau of Construction
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Mark Kern, US Environmental Protection Agency (via electronic notification)
Michael Hicks, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)
Connecticut River Wantastiquet Local Advisory Committee (via certified mail)



NH ROUTE 119 BRIDGE PROJECT

BYPASS

BRIDGE NO. 041/ 040

BRIDGE NO. 042/ 044

NH Standard Dredge & Fill Application



Hinsdale, NH–Brattleboro, VT
A004(152)
12210C
November 2019

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NHDES Wetlands Permit Application Form



WETLANDS PERMIT APPLICATION

Water Division/ Wetlands Bureau

Land Resources Management

Check the status of your application: www.des.nh.gov/onestop



RSA/Rule: [RSA 482-A](#) / [Env-Wt 100-900](#)

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

1. REVIEW TIME: Indicate your Review Time below. To determine review time, refer to [Guidance Document A](#) for instructions.

Standard Review (Minimum, Minor or Major Impact)
 Expedited Review (Minimum Impact only)

2. MITIGATION REQUIREMENT:

If mitigation is required, a Mitigation-Pre Application meeting must occur prior to submitting this Wetlands Permit Application. To determine if mitigation is required, please refer to the [Determine if Mitigation is Required Frequently Asked Questions](#).

Mitigation Pre-Application Meeting Date: Month: 11 Day: 21 Year: 2018

N/A - Mitigation is not required

3. PROJECT LOCATION:

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

ADDRESS: NH Route 119		TOWN/CITY: Hinsdale	
TAX MAP: N/A	BLOCK: N/A	LOT: N/A	UNIT: N/A
USGS TOPO MAP WATERBODY NAME: Connecticut River	<input type="checkbox"/> NA	STREAM WATERSHED SIZE: 6218 sq mi	<input type="checkbox"/> NA
LOCATION COORDINATES (If known): 42.849772, -72.551604		<input checked="" type="checkbox"/> Latitude/Longitude <input type="checkbox"/> UTM <input type="checkbox"/> State Plane	

4. PROJECT DESCRIPTION:

Provide a brief description of the project outlining the scope of work. Attach additional sheets as needed to provide a detailed explanation of your project. DO NOT reply "See Attached" in the space provided below.

This project consists of the construction of a new bridge to carry NH Route 119 over the Connecticut River, bypassing the two existing bridges. The new bridge will be approximately 1,800 feet in length and will be located just downstream of the existing bridges. The existing bridges will be retained for pedestrian and bicycle use while preserving the historic value. The project also includes improvements to a boat launch located 5 miles downstream of the bridge site.

5. SHORELINE FRONTAGE:

N/A This does not have shoreline frontage. SHORELINE FRONTAGE: **300'**

Shoreline Frontage is calculated by determining the average of the distances of the actual natural navigable shoreline frontage and a straight line drawn between the property lines, both of which are measured at the normal high water line ([Env-Wt 101.89](#)).

6. RELATED NHDES LAND RESOURCES MANAGEMENT PERMIT APPLICATIONS ASSOCIATED WITH THIS PROJECT:

Please indicate if any of the following permit applications are required and, if required, the status of the application. To determine if other Land Resources Management Permits are required, refer to the [Land Resources Management Webpage](#).

Permit Type	Permit Required	File Number	Permit Application Status
Alteration of Terrain Permit Per RSA 485-A:17	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Individual Sewerage Disposal per RSA 485-A:2	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Subdivision Approval Per RSA 485-A	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input type="checkbox"/> PENDING <input type="checkbox"/> DENIED
Shoreland Permit Per RSA 483-B	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	_____	<input type="checkbox"/> APPROVED <input checked="" type="checkbox"/> PENDING <input type="checkbox"/> DENIED

7. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:

See the [Instructions & Required Attachments](#) document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB 19 - 0171.

b. This project is within a [Designated River](#) corridor. The project is within ¼ mile of: **Connecticut River**; and date a copy of the application was sent to the [Local River Management Advisory Committee](#): Month: ___ Day: ___ Year: ___

N/A – This project is not within a Designated River corridor.

lrn@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

8. APPLICANT INFORMATION (Desired permit holder)			
LAST NAME, FIRST NAME, M.I.: NH Department of Transportation			
TRUST / COMPANY NAME:		MAILING ADDRESS: 7 Hazen Drive	
TOWN/CITY: Concord		STATE: NH	ZIP CODE: 03302
EMAIL or FAX: Andrew.O'Sullivan@dot.nh.gov		PHONE: 271-3226	
ELECTRONIC COMMUNICATION: By initialing here: _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.			
9. PROPERTY OWNER INFORMATION (If different than applicant)			
LAST NAME, FIRST NAME, M.I.: NH Department of Transportation			
TRUST / COMPANY NAME:		MAILING ADDRESS: 7 Hazen Drive	
TOWN/CITY: Concord		STATE: NH	ZIP CODE: 03302
EMAIL or FAX:		PHONE:	
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize NHDES to communicate all matters relative to this application electronically.			
10. AUTHORIZED AGENT INFORMATION			
LAST NAME, FIRST NAME, M.I.: Perron, Christine		COMPANY NAME: McFarland-Johnson, Inc	
MAILING ADDRESS: 53 Regional Drive			
TOWN/CITY: Concord		STATE: NH	ZIP CODE: 03301
EMAIL or FAX: cperron@mjinc.com		PHONE: 225-2978	
ELECTRONIC COMMUNICATION: By initialing here cjp , I hereby authorize NHDES to communicate all matters relative to this application electronically.			
11. PROPERTY OWNER SIGNATURE:			
See the Instructions & Required Attachments document for clarification of the below statements			
By signing the application, I am certifying that:			
<ol style="list-style-type: none"> I authorize the applicant and/or agent indicated on this form to act in my behalf in the processing of this application, and to furnish upon request, supplemental information in support of this permit application. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative. Any structure that I am proposing to repair/replace was either previously permitted by the Wetlands Bureau or would be considered grandfathered per Env-Wt 101.47. I have submitted a Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) to the NH State Historic Preservation Officer (SHPO) at the NH Division of Historical Resources to identify the presence of historical/ archeological resources while coordinating with the lead federal agency for National Historic Preservation Act (NHPA) 106 compliance. I authorize NHDES and the municipal conservation commission to inspect the site of the proposed project. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate. I understand that the willful submission of falsified or misrepresented information to the NHDES is a criminal act, which may result in legal action. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail. 			
 Property Owner Signature		Print name legibly	Date

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095


www.des.nh.gov

MUNICIPAL SIGNATURES

12. CONSERVATION COMMISSION SIGNATURE

The signature below certifies that the municipal conservation commission has reviewed this application, and:

1. Waives its right to intervene per RSA 482-A:11;
2. Believes that the application and submitted plans accurately represent the proposed project; and
3. Has no objection to permitting the proposed work.


	Print name legibly	Date
----------------------------------------------------------------------------------	--------------------	------

DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission’s signature is obtained in the space above.
2. Expedited review requires the Conservation Commission signature be obtained **prior** to the submittal of the original application to the Town/City Clerk for signature.
3. The Conservation Commission may refuse to sign. If the Conservation Commission does not sign this statement for any reason, the application is not eligible for expedited review and the application will be reviewed in the standard review time frame.

13. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 2014), 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.

	Print name legibly	Town/City	Date
------------------------------------------------------------------------------------	--------------------	-----------	------

DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,I

1. For applications where "Expedited Review" is checked on page 1, if the Conservation Commission signature is not present, NHDES will accept the permit application, but it will NOT receive the expedited review time.
2. IMMEDIATELY sign the original application form and four copies in the signature space provided above;
3. 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.
4. 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; and
5. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:

1. Submit the single, 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.

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

14. IMPACT AREA:

For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact.

Permanent: impacts that will remain after the project is complete.

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

Intermittent Streams: linear footage distance of disturbance is measured along the thread of the channel.

Perennial Streams/ Rivers: the total linear footage distance is calculated by summing the lengths of disturbance to the channel and each bank.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.	ATF	TEMPORARY Sq. Ft. / Lin. Ft.	ATF
Forested wetland	3,742	<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Scrub-shrub wetland		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Emergent wetland	1,664	<input type="checkbox"/> ATF	13,020	<input type="checkbox"/> ATF
Wet meadow		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Intermittent stream channel	212 / 105	<input type="checkbox"/> ATF	/	<input type="checkbox"/> ATF
Perennial Stream / River channel	8,463 / 231	<input type="checkbox"/> ATF	82,081 / 115	<input type="checkbox"/> ATF
Lake / Pond	/	<input type="checkbox"/> ATF	/	<input type="checkbox"/> ATF
Bank - Intermittent stream	/	<input type="checkbox"/> ATF	/	<input type="checkbox"/> ATF
Bank - Perennial stream / River	1,455 / 154	<input type="checkbox"/> ATF	1,529 / 62	<input type="checkbox"/> ATF
Bank - Lake / Pond	/	<input type="checkbox"/> ATF	/	<input type="checkbox"/> ATF
Tidal water	/	<input type="checkbox"/> ATF	/	<input type="checkbox"/> ATF
Salt marsh		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Sand dune		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Prime wetland		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Prime wetland buffer		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Undeveloped Tidal Buffer Zone (TBZ)		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Previously-developed upland in TBZ		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Docking - Lake / Pond		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Docking - River		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Docking - Tidal Water		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Vernal Pool		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
TOTAL	15,536 / 490		96,630 / 177	

15. APPLICATION FEE: See the [Instructions & Required Attachments](#) document for further instruction

Minimum Impact Fee or Fee for Non-enforcement related, publicly-funded and supervised restoration projects, regardless of impact classification (see RSA 482-A:3, 1(c)): Flat fee of \$ 400

Minor or Major Impact Fee: Calculate using the below table below

Permanent and Temporary (non-docking) 112,166 sq. ft. X \$0.40 = \$ 44,866.40

Temporary (seasonal) docking structure: _____ sq. ft. X \$2.00 = \$

Permanent docking structure: _____ sq. ft. X \$4.00 = \$

Projects proposing shoreline structures (including docks) add \$400 = \$

Total = \$

The Application Fee is the above calculated Total or \$400, whichever is greater = \$ 30,000*cap

irm@des.nh.gov or (603) 271-2147

NHDES Wetlands Bureau, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095

www.des.nh.gov

Supplemental Project Description

Hinsdale, NH – Brattleboro, VT 12210C

NH Route 119 Bridge Project

NHDES Wetlands Permit Application Supplemental Project Description

Introduction:

The purpose of this project is to maintain connectivity of NH Route 119 between Hinsdale, NH and Brattleboro, VT. The project is needed in order to maintain a transportation corridor that has been in existence for over 160 years and is the only crossing over the Connecticut River between New Hampshire and Vermont for a distance of approximately 15 miles to the south and 2 miles to the north.

An Environmental Assessment was completed for this project in 2013, at which time ten different design alternatives were analyzed with input from local and State agencies in Vermont and New Hampshire, the Regional Planning Commission, and federal agencies. After more than a decade of review and coordination, a new offline, downstream bridge was selected as the preferred alternative. Since the EA was completed in 2013, a Project Advisory Committee was created and has met seven times. Public Informational Meetings were held in September 2017 in both VT and NH.

Existing Conditions:

The project area straddles the Vermont-New Hampshire state line between the towns of Hinsdale, NH and Brattleboro, VT where NH Route 119 (Brattleboro Road) crosses the Connecticut River. The state line between Vermont and New Hampshire was determined in a 1934 U.S. Supreme Court decision to be the low water line on the Vermont side, as it occurred at that time. Therefore, the majority of the river channel and bridge is in New Hampshire.

The river is approximately 1,300' wide at this location, with water depths generally ranging from 14 ft to 27 ft, and velocities ranging from 1 ft/sec to 6 ft/sec. The watershed of the river at this location is 6,218 square miles. An 11-acre island is located in middle of the river within the project area. The island is undeveloped except for the existing NH Route 119 roadway. Large areas of wetland are located at its north and south ends, and an informal boat launch is accessed from the western side of the island.

The existing NH Route 119 crossing consists of an intersection with VT Routes 142/5, an approach roadway in Brattleboro, the Anna Hunt Marsh Bridge over the western channel of the Connecticut River, a mid-channel island, the Charles Dana Bridge over the eastern channel of the Connecticut River, and then an approach roadway in Hinsdale. The existing bridge structures were originally constructed in 1920 and rehabilitated in 2003. Both existing bridges are considered to be seriously deteriorated and structurally deficient due to river scouring at the footings, concrete spalling on the abutments and piers, and corrosion to the structural framing. These structures are also functionally obsolete due to vertical clearance and roadway widths.

Project Description:

The proposed bridge structure will be constructed on a new alignment, approximately 1,000' downstream from the existing bridge structures. The existing bridges will be retained for pedestrian and bicycle use while preserving the historic nature of these structures.

The proposed bridge will be an 1,809' long, 8-span, curved steel girder structure with a typical cross section of two 12' travel lanes, two 8' shoulders, and one 6' sidewalk, for a rail-to-rail width of 46'. As the bridge approaches the Vermont side of the river, its width will increase to 53.5' to accommodate a turning lane. The profile of the bridge will rise up from Vermont at 1.5% for 1,100' and will go down at 1.0% to the New Hampshire side. The profile of the new bridge will be over 30' higher than the existing bridges. Clearance under the bridge will be 43' to 46' to the normal water elevation (El. 220) across much of the channel. The bridge will have steel reinforced, solid wall piers with concrete foundations built on piles. Tremie seal methodology will be used so that foundation and pier concrete can be poured in the dry within a cofferdam that will be installed around each new pier during construction. Five bridge piers will be located in the river (all in NH) and one will be located on the mid-channel island. The westernmost pier will be located in upland in Vermont. No fill for scour protection is needed at the piers in the river.

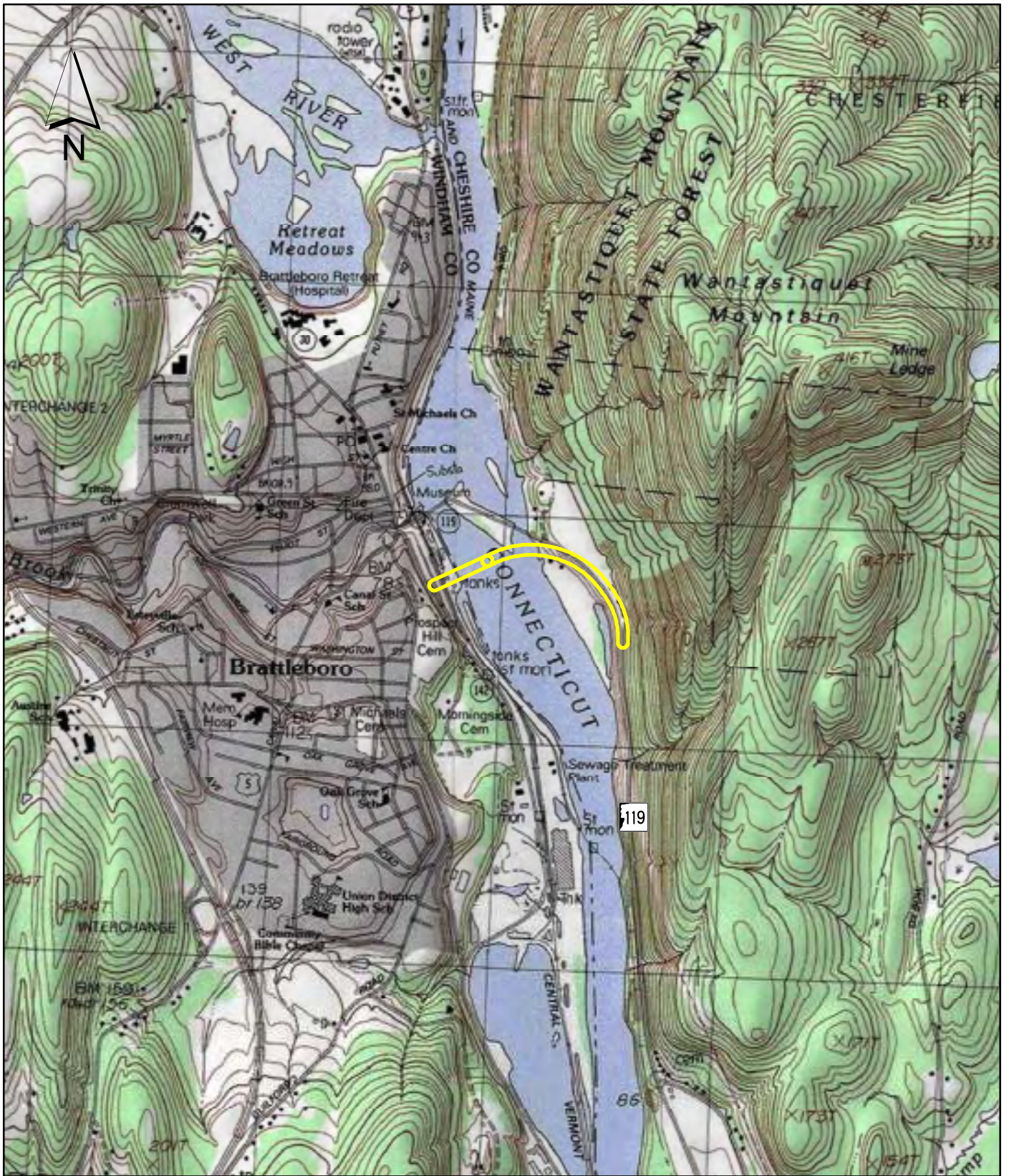
The NHDOT completed a hydrologic and hydraulic analysis (interim report is included in this application package). The effective floodway elevation is 231.4' based on FEMA mapping and the preliminary hydraulic modeling completed by NHDOT calculated a proposed floodway water surface of 231.48'. A FEMA Conditional Letter of Map Revision has been submitted to FEMA for approval. However, the slight increase in the base flood elevation is not expected to result in any significant change in the mapped flood hazard zones used for insurance; therefore, no impact on abutters is anticipated. NHDOT coordinated with FEMA, the NH Floodplain Manager, and the Vermont Regional Floodplain Manager throughout the preparation of the CLOMR.


Access for construction is anticipated to be from a trestle located on the upstream side of the proposed bridge, extending from the NH bank to the last in-water pier near the VT bank. Impacts from the trestle are shown as a large block of temporary impact to give the contractor flexibility in placing the trestle piles. However, the only direct impacts from the trestle will be from the temporary trestle piles. It is estimated that there will be 560 14" x 14" temporary trestle piles, which will result in only 765 sq ft of temporary impact to the channel and bank. The trestle will have fingers off the main trestle to provide access to each new pier. There will be no temporary fill placed in the river during construction.

The overall project will result in 1.62 acres of additional impervious (1.21 ac in NH; 0.41 ac in VT). Treatment areas in VT and NH will treat runoff from 3 acres of impervious (1.87 ac in NH; 1.13 ac in VT). Two stormwater BMPs will be constructed on the NH side and will outlet into the river just north of the existing NH Route 119 bridge. A BMP will also be constructed on the VT side. Overall, the project will be treating runoff from approximately 1.9 times the amount of impervious area that is being added. There are currently no treatment areas in the vicinity of the project.

The proposed bridge project will close the existing bridges to motorized vehicles, which will eliminate access to the informal boat launch located on the island. To offset this closure, improvements will be constructed at an existing boat launch located off Prospect Street approximately 5 miles downstream of the bridge site. NHDOT has discussed the improvements with the Public Water Access Advisory Board and NH Fish & Game. The site is currently town-owned. The proposed improvements will consist of creating 4 parking spaces and a turnaround area, improving the ramp to the river, and realigning the adjacent rail trail. Jurisdictional impacts resulting from these improvements are included in this permit application.

Location Maps



 Project Location - Bridge Replacement



NH DEPARTMENT OF TRANSPORTATION
HINSDALE, NH - BRATTLEBORO, VT, 12210C

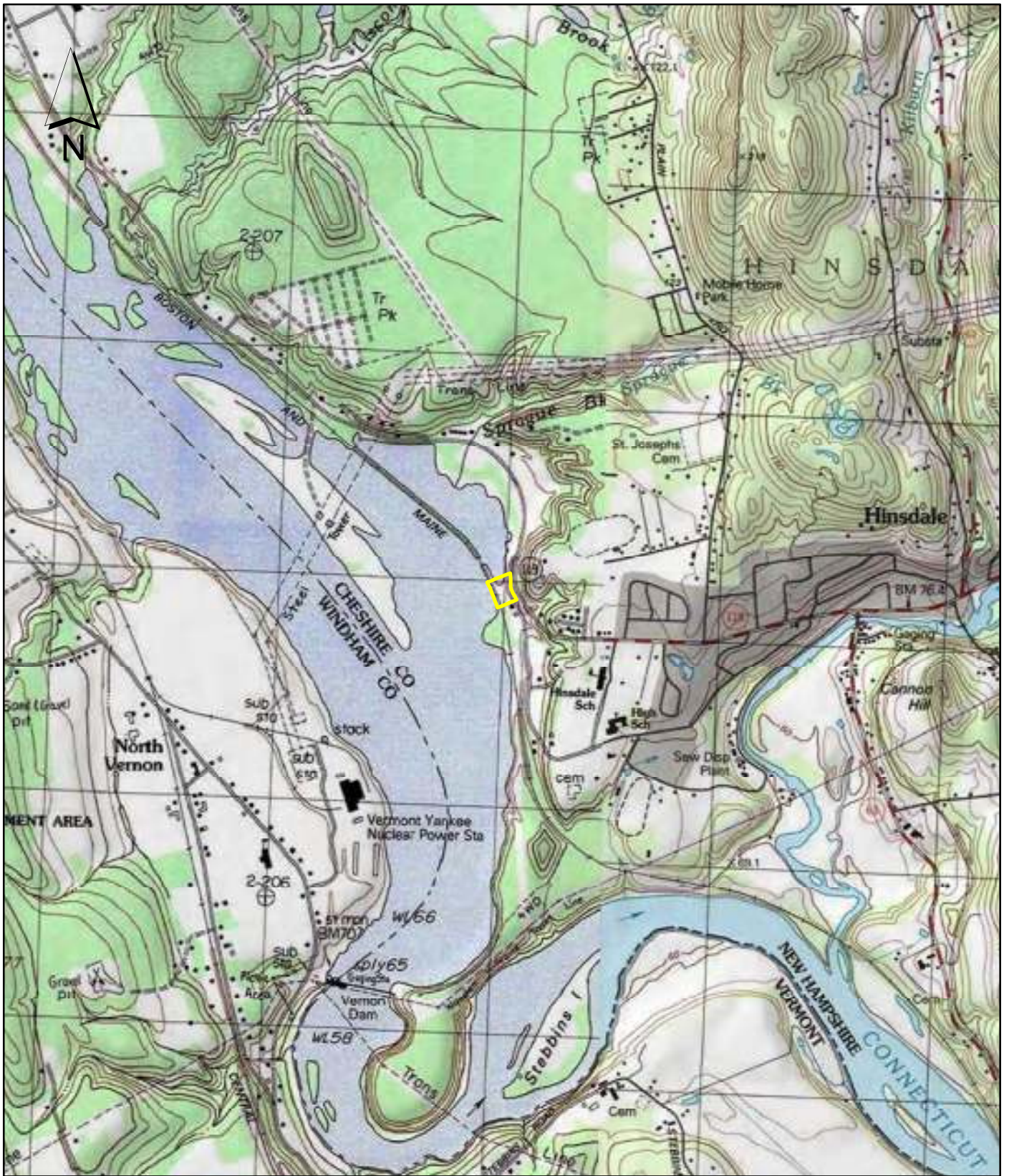
USGS LOCATION MAP


SCALE :
1 inch = 2,000 feet

DATE :
DECEMBER 2018

FIGURE :
1a





 Project Location - Boat Launch Improvements

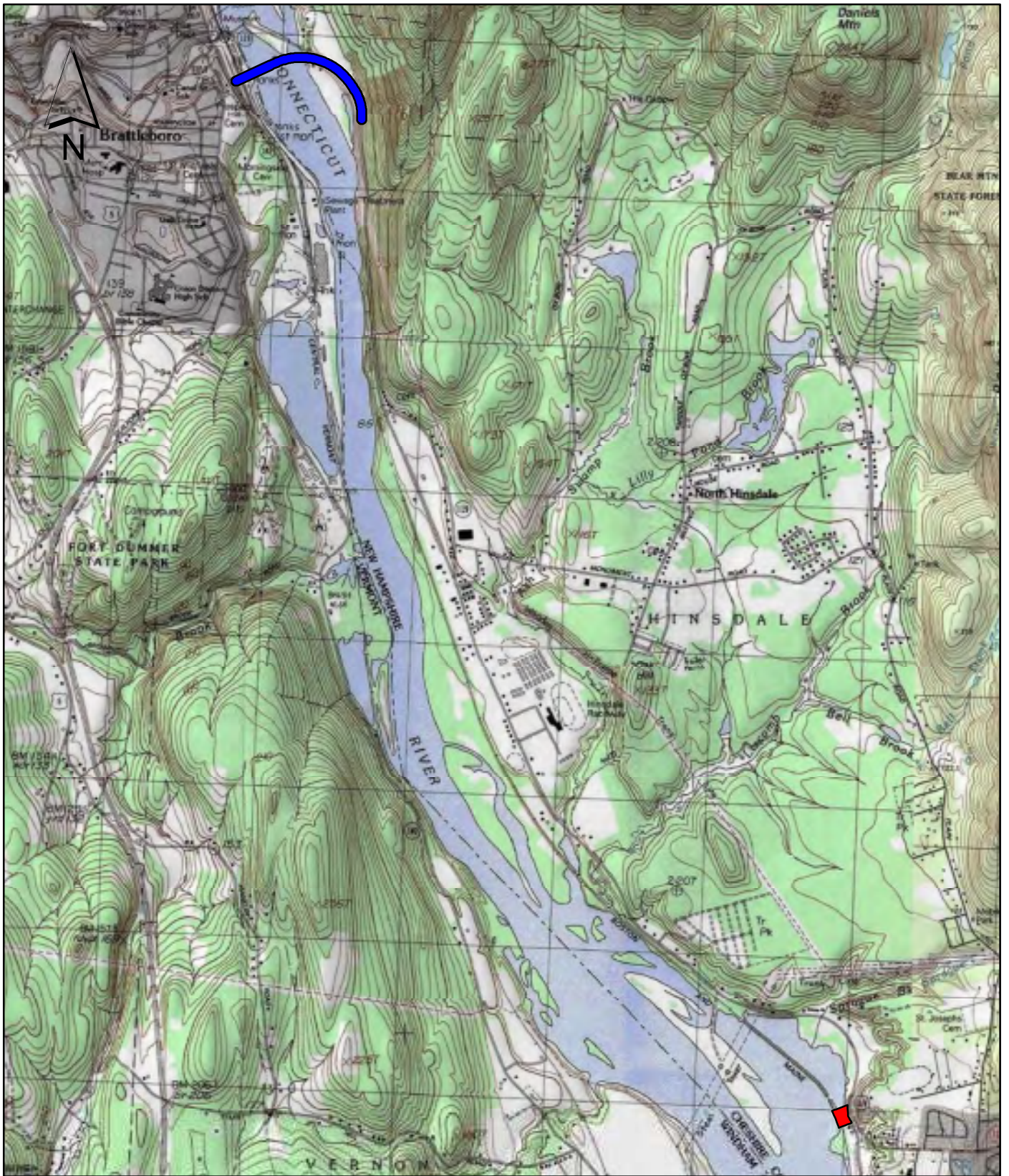


NH DEPARTMENT OF TRANSPORTATION
HINSDALE, NH - BRATTLEBORO, VT, 12210C

USGS LOCATION MAP

SCALE: 1 inch = 2,000 feet	DATE: DECEMBER 2018	FIGURE: 1b
-------------------------------	------------------------	---------------





- █ Proposed Bridge Alignment
- █ Boat Launch Improvements



NH DEPARTMENT OF TRANSPORTATION
HINSDALE, NH - BRATTLEBORO, VT, 12210C

USGS LOCATION MAP

SCALE: 1 inch = 3,000 feet	DATE: AUGUST 2019	FIGURE: 1c
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Attachment A – 20 Questions



WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS
Land Resources Management
Wetlands Bureau



Check the Status of your application: www.des.nh.gov/onestop

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

Env-Wt 302.04 Requirements for Application Evaluation - For any major or minor project, the applicant shall demonstrate by plan and example that the following factors have been considered in the project’s design in assessing the impact of the proposed project to areas and environments under the department’s jurisdiction. Respond with statements demonstrating:

1. The need for the proposed impact.

The purpose of this project is to maintain connectivity of NH Route 119 between Hinsdale, NH and Brattleboro, VT. The project is needed in order to maintain a transportation corridor that has been in existence for over 160 years and is the only crossing over the Connecticut River between New Hampshire and Vermont for a distance of approximately 15 miles to the south and 2 miles to the north. The existing bridges that currently carry this route over the river are structurally deficient and functionally obsolete.

2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.

An Environmental Assessment was completed for this project in 2013, at which time ten different design alternatives were analyzed with input from local and State agencies in Vermont and New Hampshire, the Regional Planning Commission, and federal agencies. After more than a decade of review and coordination, a new offline, downstream bridge was selected as the preferred alternative. When the alternatives analysis was completed, it was determined that the downstream bridge minimized impacts to resources while retaining the historic bridges and preserving connectivity between the two communities.

3. The type and classification of the wetlands involved.

The Connecticut River is large river with a Cowardin classification of R2UBHh or riverine, lower perennial, unconsolidated bottom, with a permanently flood water regime, and a diked/impounded modifier. In the vicinity of the boat launch there is a small intermittent stream with a Cowardin classification of R4SB4 or, riverine, intermittent, streambed, with a sandy substrate. There are also proposed impacts along the jurisdictional banks of the Connecticut River. Palustrine wetlands that will be impacted by the proposed project have classifications of PEM1E, or palustrine emergent, persistent, seasonally flooded/saturated; PEM5D, or palustrine emergent, Phragmites australis, with a continuously saturated water regime; PFO1E, or palustrine forested, broad-leaved deciduous, with a seasonally flooded/saturated water regime.

4. The relationship of the proposed wetlands to be impacted relative to nearby wetlands and surface waters.

The Connecticut River is the most prominent resource in the project area. The impacted wetlands are all associated with the Connecticut River system and are all hydrologically connected. The majority of the wetlands are located directly adjacent to the river or within the floodplain.

5. The rarity of the wetland, surface water, sand dunes, or tidal buffer zone area.

The Connecticut River is the largest river in New Hampshire (255 miles long) and forms the majority of the border between Vermont and New Hampshire. The river does not have any unique characteristics in the vicinity of the project area. The palustrine wetland types are common throughout the state. There are no rare wetland types, prime wetlands, or exemplary natural communities in the vicinity of the project area.

6. The surface area of the wetlands that will be impacted.

The project will result in 15,536 sq ft of permanent impacts to the river, its banks, and adjacent wetlands at the bridge site and boat launch.

7. The impact on plants, fish and wildlife including, but not limited to:
- a. Rare, special concern species;
 - b. State and federally listed threatened and endangered species;
 - c. Species at the extremities of their ranges;
 - d. Migratory fish and wildlife;
 - e. Exemplary natural communities identified by the DRED-NHB; and
 - f. Vernal pools.

The NH Natural Heritage Bureau (NHB) has reviewed the project area and identified records of state-listed species in the vicinity of the proposed bridge including: grass-leaved mud-plantain, long-leaved pondweed, pygmy-weed, Houghton's Umbrella Sedge, dwarf wedge mussel, Cerulean warbler, and small footed bat. In the vicinity of the boat launch, the NHB identified records of the following species: flat-stem pondweed, grass-leaved mud-plantain, lesser clearweed, long-leaved pondweed, and Vasey's pond weed. No exemplary natural communities were identified.

The USFWS Information, Planning, and Conservation System (IPaC) web tool was used to generate an Official Species List of any federally listed species have the potential to occur within the project area. According to the Official Species List, the federally-threatened northern long-eared bat has the potential to occur in this region of New Hampshire. In addition, the NHB memo identified a record of shortnose sturgeon (federally endangered) below the Vernon Dam.

Coordination with NHB, NH Fish and Game, and USFWS has been ongoing and rare plant surveys have been conducted. Results of all coordination and surveys are summarized in an attached narrative. Only temporary impacts are anticipated to rare plants located within the vicinity of the trestle.

The project will implement measures to minimize impacts to migratory fish during construction. See attached narrative for more information.

No vernal pools were identified in the vicinity of the project area.

8. The impact of the proposed project on public commerce, navigation and recreation.

The Connecticut River is used for recreational activities including boating, paddling, and fishing. There may be temporary disruptions to these activities during construction.

The proposed project will improve and maintain the existing transportation corridor along NH Route 119 between Hinsdale, NH and Brattleboro, VT.

9. The extent to which a project interferes with the aesthetic interests of the general public. For example, where an applicant proposes the construction of a retaining wall on the bank of a lake, the applicant shall be required to indicate the type of material to be used and the effect of the construction of the wall on the view of other users of the lake.

The proposed project involves constructing a new bridge structure on a new alignment over the Connecticut River. The existing bridges will be retained for pedestrian and bicycle use while preserving the historic integrity of the structures. The new bridge will consist of an aesthetically pleasing, single bridge structure located downstream from the existing structures. There is substantial development along this section of the river, and the proposed bridge structure will not substantially change the aesthetics of the surrounding area.

10. The extent to which a project interferes with or obstructs public rights of passage or access. For example, where the applicant proposes to construct a dock in a narrow channel, the applicant shall be required to document the extent to which the dock would block or interfere with the passage through this area.

The project will not interfere with or obstruct public rights of passage or access. The river access from the island will be replaced with improved river access just downstream from the project. Acquisition of right-of-way and permanent easements is required for work outside the existing right-of-way.

11. The impact upon abutting owners pursuant to RSA 482-A:11, II. For example, if an applicant is proposing to rip-rap a stream, the applicant shall be required to document the effect of such work on upstream and downstream abutting properties.

The project will not require riprap in the river but will construct 7 new bridge piers in the floodway of the Connecticut River. The effective floodway elevation is 231.4' based on FEMA mapping and the preliminary hydraulic modeling completed by NHDOT calculated a proposed floodway water surface of 231.48'. A FEMA Conditional Letter of Map Revision will be prepared and submitted to FEMA for approval. However, the slight increase in the base flood elevation is not expected to result in any significant change in the mapped flood hazard zones used for insurance; therefore, no impact on abutters is anticipated.

12. The benefit of a project to the health, safety, and well being of the general public.

The project will provide safety benefits to the traveling public by improving traffic operations and providing a new structurally sound bridge structure over the Connecticut River.

13. The impact of a proposed project on quantity or quality of surface and ground water. For example, where an applicant proposes to fill wetlands the applicant shall be required to document the impact of the proposed fill on the amount of drainage entering the site versus the amount of drainage exiting the site and the difference in the quality of water entering and exiting the site.

Two stormwater treatment areas will be constructed on the NH side of the project to treat runoff from the increased area of pavement. Overall, the project will be treating runoff from approximately 1.9 times the amount of impervious area that is being added, resulting in a net improvement in water quality. All appropriate erosion and sediment control measures will be implemented to avoid adverse impacts to water quality during construction.

14. The potential of a proposed project to cause or increase flooding, erosion, or sedimentation.

The project will result in a slight increase in base flood elevation. A FEMA Conditional Letter of Map Revision will be prepared and submitted to FEMA for approval. However, the slight increase in the base flood elevation is not expected to result in any significant change in the mapped flood hazard zones used for insurance; therefore, the project is not expected to cause or increase flooding on adjacent properties.

The project is not expected to cause erosion or sedimentation following construction. All appropriate erosion and sediment control measures will be implemented during construction.

15. The extent to which a project that is located in surface waters reflects or redirects current or wave energy which might cause damage or hazards.

The project will not reflect or redirect river currents to the extent that damage or hazards would result.

16. The cumulative impact that would result if all parties owning or abutting a portion of the affected wetland or wetland complex were also permitted alterations to the wetland proportional to the extent of their property rights. For example, an applicant who owns only a portion of a wetland shall document the applicant's percentage of ownership of that wetland and the percentage of that ownership that would be impacted.

The project entails impacts associated with a major public infrastructure project on the Connecticut River. It is unlikely that abutters would undertake any activity that would result in cumulative impacts to this 1,300' wide river. Any activities that are undertaken would be required to comply with State and Federal regulations.

17. The impact of the proposed project on the values and functions of the total wetland or wetland complex.

The project is not expected to impact the overall functions and values of the Connecticut River system.

18. The impact upon the value of the sites included in the latest published edition of the National Register of Natural Landmarks, or sites eligible for such publication.

No such sites are located in the vicinity of the project.

19. The impact upon the value of areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, national lakeshores, and such areas as may be established under federal, state, or municipal laws for similar and related purposes such as estuarine and marine sanctuaries.

The 410-mile Connecticut River, including its 7.2 million-acre watershed, was designated as the country's first (and only) National Blueway in May 2012. The intent of this designation was to establish a "community-driven conservation and recreation agenda for the 21st century." The proposed project will address existing transportation infrastructure over and adjacent to the river. The project will not impact the river's conservation or recreational values.

The Silvio O. Conte National Wildlife Refuge is comprised of over 36,000 acres within parts of the four Connecticut River watershed states of New Hampshire, Vermont, Massachusetts, and Connecticut. The refuge "works in partnership with a wide variety of individuals and organizations to provide environmental education, to encourage and support appropriate habitat conservation and management on public and private lands, and to protect habitat." Federally protected lands do not exist in or near the project area. As noted above, the proposed project will address existing transportation infrastructure over and adjacent to the river and will not impact the river's conservation or recreational values.

The Connecticut River was designated in 2012 as a NH Designated River under NH RSA 483, The Rivers Management and Protection Act. The Rivers Management and Protection Act classifies the entire length of designated rivers using four categories: Natural, Rural, Rural-Community, and Community. State regulated protection measures apply to each of these categories. The segment of the Connecticut River within the project area is classified as Rural-Community. No protection measures associated with this classification restrict the construction of the proposed project. The project will not affect the characteristics contributing to its designation under the Rivers Management and Protection Program.

20. The degree to which a project redirects water from one watershed to another.

The project will not redirect water from one watershed to another.

Additional comments

Natural Resource Agency Coordination Meeting Minutes

BUREAU OF ENVIRONMENT CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting

DATE OF CONFERENCE: November 21, 2018

LOCATION OF CONFERENCE: John O. Morton Building

ATTENDED BY:

NHDOT

Matt Urban
Sarah Large
Ron Crickard
Tim Boodey
James McMahon III
Rebecca Martin
Meli Dube
Chris Carucci
Julius Nemeth
Don Lyford
Bill Saffian
Tony King
Trent Zanes
Wendy Johnson
Marc Laurin
Jason Tremblay
Jon Hebert

Kevin Nyhan
Hans Weber
Ron Kleiner

ACOE

Mike Hicks

EPA

Mark Kern

NHDES

Gino Infascelli
Lori Sommer
Dale Keirstead

NHF&G

Carol Henderson
John Magee

NHB

Amy Lamb

The Nature Conservancy

Pete Steckler

**Consultants/Public
Participants**

Christine Perron
Pete Walker
Lindsay Matras
Jason Hilton
Chris Fournier

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

Finalize August 15, 2018 and September 19, 2018 Meeting Minutes	2
Berlin, #42385	2
Dixville, #42398.....	2
Stratford, #41788.....	3
Gilford, #42249 (X-A004(796)).....	5
Hinsdale-Brattleboro, #12210C (A004(152))	6
Salem-Manchester, #13933A (A004(435))	9
Bennington, #29486 (X-A004(156)).....	10
Danbury, #16303 (X-A001(230)).....	11
Laconia, #40656	12
Haverhill, #41734.....	13
Canaan, #41399	14
Laconia, #26706	15

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

Loc 1 Inlet	1250 sf wetland	1,100 sf channel	(65 LF)	
Loc 1 Outlet	860 sf wetland	240 sf channel	(25 LF)	
Loc 2 Inlet	110 sf wetland	360 sf channel	(30 LF)	
Loc 2 Outlet	0 sf wetland	200 sf channel	(20 LF)	
Loc 3 Inlet	200 sf wetland	210 sf channel	(20 LF)	
Loc 3 Outlet	520 sf wetland	110 sf channel	(20 LF)	350 sf Bank
Total Temp Channel 180 LF		Total Temp Bank 56 LF		Total Temp 236 LF

Carol Henderson, NH Fish and Game, inquired about timing of the work and indicated that spring work would be a concern for fish spawning. C. Carucci confirmed that the work would likely occur during summer during low flow conditions. C. Henderson asked if the Shotcrete installation would create a perch and M. Dube confirmed that the stone at the inlet and outlets will be re-graded to raise the elevation of the stream bed at the inlets and outlets slightly to match the 4" increase in pipe invert elevation. Dale Keirstead, NHDES Wetlands Bureau, noted that Lily Pond is a protected Prime Wetland located north of Location 1. M. Dube stated that the Department is aware of the proximity but that the proposed work will not impact Lily Pond. L. Sommer stated that since the work is minor and will be limited to previously disturbed areas, no mitigation is required for the project as proposed.

This project has not been previously discussed at a Monthly Natural Resource Agency Coordination Meeting.

Hinsdale-Brattleboro, #12210C (A004(152))

Christine Perron introduced the project. This project consists of the construction of a new bridge to carry NH Route 119 over the Connecticut River, bypassing the two existing bridges. The new bridge will be approximately 1,800 feet in length and will be located just downstream of the existing bridges. The project now also includes improvements to a boat launch located about 5 miles downstream of the bridge site. The project was last discussed at the April 2018 meeting, at which preliminary impacts for the bridge were presented. The purpose of today's meeting is to discuss wetland impacts and mitigation for the bridge site as well as the boat launch prior to submitting the permit application.

Trent Zanes provided an overview of the boat launch. The proposed bridge project will close the existing bridges to motorized vehicles, which will eliminate access to the water access located on the island. To offset this closure, improvements will be constructed at an existing boat launch located off Prospect Street approximately 5 miles downstream of the bridge site. NHDOT has discussed the improvements with the Public Water Access Advisory Board. The site is currently town-owned, and the town recently constructed a larger parking area at the site. The proposed improvements will consist of creating 4 parking spaces and a turnaround area, improving the ramp to the river, and realigning the rail trail.

Lori Sommer asked what type of surface would be used at the boat launch. T. Zanes replied that the material has not yet been determined, but it may be crushed gravel or stone. It's also possible that part of it would be paved. There may be an opportunity to fit in a small stormwater treatment area to treat runoff from at least a portion of the site.

Dale Keirstead asked if any coordination has taken place with the operator of the dam located downstream to determine if there are any potential safety concerns associated with the proximity to the boat launch. Matt Urban commented that this is an existing boat launch that was previously permitted. [**A point of*

clarification – there is an existing ramp into a wetland on the east side of a causeway at the boat launch site. The proposal is to create a new ramp into the Connecticut River at this location.] T. Zanes said that he spoke with someone regarding the low water elevation, and he was told that the company just filed a new FERC permit and they don't intend to go outside their new operating limit. Carol Henderson noted that the minimum flow for the operation of the dam was still under discussion as part of the FERC process. T. Zanes said that the low water level is 220' and there is 5' of water at the ramp, so concerns were not anticipated.

C. Henderson commented that NH Fish & Game recommends using precast concrete planks for the ramp, with an anchor block at the top for ice. T. Zanes confirmed that this was proposed.

C. Henderson asked who would be maintaining the boat launch. T. Zanes said that it is currently owned by the town and the intent would be for the town to continue maintaining it. C. Henderson said that it would be more appropriate for NH Fish & Game to secure a maintenance agreement from the town in order for the access to remain open to the public. The existing boat ramp is heavily used and the NHFGD would not like the facility to be closed to residents of the town only. T. Zanes said that could be discussed.

C. Perron reviewed proposed impacts that would result from the boat launch improvements.

Permanent Impacts

Forested wetland: 4,536 sq ft
 River channel: 424 sq ft (12 linear ft)
 River bank: 729 sq ft (91 linear ft)
 Intermittent stream: 264 sq ft (134 linear ft)

Temporary Impacts

River channel: 467 sq ft (10 linear ft)

C. Henderson stated that riprap is typically used to stabilize the Department's boat ramp designs and should be included in the total impacts. To ensure everyone was clear, C. Perron noted that impacts from riprap were not included in the impact totals, and adding riprap would increase the permanent impacts to the river.

C. Perron then reviewed the draft wetland impact plans and summarized impacts. Temporary impacts would be required for a temporary construction trestle that would be launched from the NH bank and located along the upstream side of the new bridge. Fingers off the trestle would be needed at each pier. The trestle would be supported by piles and would not require any temporary fill. Five bridge piers would result in permanent impacts to the river, NH bank, and the wetland on the island. The overall footprint of the trestle is shown as a temporary impact; however, the actual impact will be from each individual pile, which will be approximately 765 sq ft. An area of permanent bank impact would be required for the proposed pipe that will outlet the stormwater treatment area in NH. The new roadway slope will also result in an area of permanent wetland impact along the east side of the marina driveway.

Permanent Impacts

Wetland: 1,659 sq ft
 Channel: 6,563 sq ft (209 linear ft)
 Bank: 633 sq ft (57 linear ft)

Temporary Impacts

Wetland: 13,020 sq ft

Channel: 69,498 sq ft (115 linear ft)
Bank: 1,529 sq ft (62 linear ft)

Impacts on the Vermont side of the river will consist of 2,500 sq ft of temporary impact for access for drainage work.

The cumulative permanent impacts for the overall project (bridge and boat launch) at this time consist of:

Wetland: 6,195 sq ft.
River channel and bank: 8,349 sq ft (369 linear feet)
Intermittent stream: 264 sq ft (134 linear feet)
Total permanent and temporary impacts: 2.3 acres

C. Perron noted that the project exceeds the linear mitigation threshold for impacts to the river. L. Sommer confirmed that permanent wetland impacts would also require mitigation since the threshold for mitigation was met for the project.

L. Sommer asked what the deck of the trestle would be. Bill Saffian replied that the trestle would have 14"x14" steel H-piles with pier caps. The decking material would be up to the Contractor. Amy Lamb asked how many piles would be required. The total number of piles is expected to be 560.

L. Sommer asked for input from the Federal agencies on the need to mitigate for temporary impacts. Mark Kern asked if any trees would be removed to construct the trestle. Photos were reviewed and it was determined that some scattered trees would need to be cleared but substantial tree clearing would not be necessary. M Kern stated that he did not consider the scattered tree removal to be a substantial impact and did not think mitigation for temporary impacts was warranted.

Based on the permanent impacts presented, the in-lieu fee for this project would be \$148,646.86.

L. Sommer asked if the Conservation Commission was contacted for input on potential mitigation projects. C. Perron replied that Matt Urban sent an email to groups asking for input. The Connecticut River Joint Commissions responded with a short list of potential restoration sites but did not provide any details. Based on the project schedule and lack of detailed input, the NHDOT determined that an in-lieu fee was the preferred option for mitigation. L. Sommer commented that, for all projects, NHDOT needs to make more of an effort to reach out to Conservation Commissions to discuss mitigation options. For this project, she would like to see meeting minutes or correspondence that shows an effort to coordinate. She also noted that this project would have been a good candidate for the Stream Passage Improvement Program.

In addition to the NHDES Wetland Permit, the project would require a Shoreland Permit and several Vermont permits. Mike Hicks and Mike Adams (VT Corps office) have previously confirmed that the project could be authorized under the NH and VT General Permits.

Mike Hicks asked about sign-offs for other resource concerns. C. Perron said that Section 106 consultation was complete, a US Coast Guard Bridge Permit was not required, there are no dwarf wedgemussel concerns in this section of river, and the project fit within the FHWA Programmatic Consultation on northern long-eared bat.

The wetland permit application will be submitted in late December 2018. The project is currently scheduled to advertise in September 2019, with construction starting in early 2020.

State-listed plants were briefly discussed. McFarland Johnson completed a plant survey and identified populations of two species in the river, primarily along the western and southern shoreline of the island. A. Lamb asked if the trestle finger at Pier 4 could be relocated to avoid impacting the rare plant populations that are located between Pier 4 and the island. B. Saffian stated that the trestle finger could be moved to the west side of Pier 4. A. Lamb noted that there is a historical record of another species on the island that grows in sandy areas. She asked if it would be possible to review the area again prior to construction. Ron Crickard said that would be possible. A. Lamb asked if any vegetation was seen in the river in the vicinity of the boat launch. This question and any other outstanding questions regarding rare plants will be addressed at a follow up meeting with Amy Lamb.

This project has been previously discussed at the 1/22/1998, 5/20/2009, 11/15/2017, 2/21/2018, 4/18/2018 Monthly Natural Resource Agency Coordination Meetings.

Salem-Manchester, #13933A (A004(435))

P. Walker summarized the I-93 Contract A project, which proposes to widen the I-93 highway from three to four lanes south of Exit 1. Total wetland impacts will be less than 1,300 square feet and include impacts to Wetlands S-9 (drainage outlets), S-10 (a constructed ditch line), and M-13 (roadside drainage). P. Walker explained that the project design was modified following the July 2018 RAM to avoid impacts to the Harris Brook Tributary by eliminating a proposed stormwater BMP. Instead, the project design intends to use surplus pollutant loading credits in Policy Brook generated by previous stormwater BMPs constructed during Contracts D & E. Contract A would shift a small amount of stormwater from the Harris Brook Tributary watershed to the Policy Brook watershed. This shift in watershed area will not be significant given the overall large size of each watershed. There will be less than a 0.1% increase of flow to Policy Brook and a 0.3% reduction of flow to the Harris Brook Tributary.

P. Walker then reviewed proposed impacts within the protected shoreland of the Spicket River and Policy Brook. A total of 27 acres of protected shoreland is within the project limits. The majority of these impacts will be within the existing highway infrastructure. P. Walker described the proposed impervious area impacts within the natural woodland, and waterfront buffers of the protected shoreland. Tree removal will occur within the waterfront buffer due to the construction of a soundwall. Mitigation for this tree removal is still being discussed and will be developed under a separate remedial planting contract at the adjacent Haigh Avenue mitigation site.

Finally, P. Walker gave an update on NH Natural Heritage Bureau (NHNHB) and NH Fish and Game Department (NHF&G) coordination. The project impacts are not within areas where the listed plant species, nor the natural community, are likely to occur. No direct impacts will occur within the Spicket River/Policy Brook, therefore the vertebrate species identified on the NHNHB report are not anticipated to be impacted. Correspondence with Amy Lamb (NHNHB) and Melissa Doperalski (NHF&G) indicated no concerns based on the reduction of proposed impacts.

M. Hicks asked about potential cultural resource impacts. M. Hicks also asked if there are any historic districts near the project. P. Walker answered that there is an Armenian Settlement Historic District in Salem, but it is not impacted by the project. P. Walker also noted that a Section 106 Request for Project Review had been submitted to NHDHR for their review. NHDHR requested survey of the "Mac" Subdivision/Haigh Avenue area if these would be impacted by the project, but FHWA and NHDOT concluded there would be no impacts to these areas as all work is within the existing I-93 right-of way. L. Sommer asked if the pollutant loading information was reviewed by NHDES staff yet. W. Brooks confirmed that M. Hemmerlein had sent information to Gregg Comstock, but was unsure if a response was received from NHDES.

Mitigation

Hinsdale, NH – Brattleboro, VT 12210C

NH Route 119 Bridge Project

Mitigation Narrative

Impacts to jurisdictional areas have been minimized to the extent practicable while still accomplishing the purpose and need of the project. The project requires compensatory mitigation for unavoidable permanent impacts to bank, channel, and wetlands associated with the construction of a new bridge across the Connecticut River and improvements to an existing boat launch on the river. Boat launch improvements are required to offset the loss of access to an existing informal boat launch on the mid-channel island.

Permanent impacts from the proposed bridge are as follows:

River: 7,572 sq ft (209 lf)

Bank: 444 sq ft (57 lf)

Wetland: 1,959 sq ft

Total permanent impacts: 9,975 sq ft (266 lf)

Permanent impacts from the boat launch improvements are as follows:

River: 891 sq ft (22 lf)

Bank: 1011 sq ft (97 lf)

Intermittent Stream: 212 sq ft (105 lf)

Wetland: 3742 sq ft

Total permanent impacts: 5856 sq ft (224 lf)

Coordination with stakeholders has occurred on and off for nearly 20 years, since approximately 2000. Not all of this coordination was directly applicable to seeking mitigation opportunities, especially early in the project's development; however, there have been a number of opportunities for stakeholders to discuss concerns with proposed impacts and inquire about mitigation. A list of more recent public meetings is on the project website: <https://www.nh.gov/dot/projects/hinsdalebrattleboro12210/index.htm>

No opportunities for land preservation have been brought forward during the project's development. The State-owned Wantastiquet Mountain Natural Area is located just to the north and east of the project in NH. The mid-channel island is also State-owned. All other areas in the immediate vicinity of the bridge consist of developed land. Much of the land surrounding the boat launch is owned by the Town of Hinsdale or is residential development. For these reasons, land preservation in the immediate vicinity of the project is not practicable.

NHDOT contacted the Hinsdale Conservation Commission and the Wantastiquet Subcommittee of the CRJC in April 2018 to specifically to inquire about a list of local mitigation projects. No reply was received from the Conservation Commission. The CRJC responded with a list of sites that lacked any details about what the projects would entail and where projects were located. Correspondence is attached.

Due to the minimal information provided on local mitigation priorities, suitability to the project was not possible to assess and DOT determined that the best course of action was to mitigate via an in-lieu fee payment.

Hinsdale, NH – Brattleboro, VT 12210C

NH Route 119 Bridge Project

Mitigation Narrative

The NHDES Aquatic Resource Mitigation Fund Stream Payment Calculator was utilized to determine the total ARM Fund stream payment of \$152,260.88 for the total impacts described above.

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

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact =	5701.00
		43560.00
	Acres of impact =	0.1309
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.1963
	Tidal wetlands:	0.3926
	All other areas:	0.1963
3 Wetland construction cost:		
	Forested wetlands:	\$18,266.44
	Tidal Wetlands:	\$36,532.88
	All other areas:	\$18,266.44
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	4689
	Forested wetlands:	\$920.52
	Tidal wetlands:	\$1,841.05
	All other areas:	\$920.52
5 Construction + land costs:		
	Forested wetland:	\$19,186.96
	Tidal wetlands:	\$38,373.93
	All other areas:	\$19,186.96
6 DES Administrative cost:		
	Forested wetlands:	\$3,837.39
	Tidal wetlands:	\$7,674.79
	All other areas:	\$3,837.39
*****	TOTAL ARM PAYMENT*****	
	Forested wetlands:	\$23,024.36
	Tidal wetlands:	\$46,048.72
	All other areas:	\$23,024.36

**DES AQUATIC RESOURCE MITIGATION FUND
STREAM PAYMENT CALCULATION**

INSERT LINEAR FEET OF IMPACT on BOTH BANKS AND CHANNEL		
	Right Bank	
	Left Bank	154.0000
	Channel	336.0000
	TOTAL IMPACT	490.0000
	Stream Impact Cost:	\$107,697.10
	DES Administrative cost:	
		\$21,539.42
***** TOTAL ARM FUND STREAM PAYMENT*****		
		\$129,236.52

Christine J. Perron

From: Alex Belenz <abelenz@nccouncil.org>
Sent: Wednesday, April 18, 2018 9:06 AM
To: Urban, Matt
Cc: Crickard, Ronald; Christine J. Perron
Subject: RE: Mitigation Priorities?

Hi Matt,

Here is a comment I received from Jim Calchera, Wantastiquet subcommittee member regarding mitigation priorities near the Hindsale bridge project:

I would agree with you Russell, Broad Brook is certainly an area that if was restored would provide good habitat for waterfowl, fish, and a potential boat launch area. Other areas I'D also place high priority on would be the wetland area across from Broad Brook where the river used to back up into the woods providing another area for waterfowl. Same for the little setback just behind Puffer's, the channel that used to be present going into Cersosimo's from the north, Monkey Island area and of course the outlet from the Hindsale launch to the main river.

Best,
Alex



Alex Belenz
Planner
North Country Council
161 Main Street
Littleton, NH 03561
(603) 444-6303 x2012

From: Urban, Matt [mailto:Matt.Urban@dot.nh.gov]
Sent: Tuesday, April 3, 2018 1:28 PM
To: Alex Belenz <abelenz@nccouncil.org>
Cc: Crickard, Ronald <Ronald.Crickard@dot.nh.gov>; Christine Perron <CPerron@mjinc.com>
Subject: RE: Mitigation Priorities?

Greatly appreciated.
Thanks,
Matt

From: Alex Belenz [mailto:abelenz@nccouncil.org]
Sent: Tuesday, April 03, 2018 1:26 PM
To: Urban, Matt

Cc: Crickard, Ronald; Christine Perron

Subject: RE: Mitigation Priorities?

Hi Matt,

Thanks for the information. We want to go with the plan that best suits your project timeline. I'll reach out to the subcommittee members encourage them to reply as individuals before April 18th. If it happens that there is still an opportunity to submit input as a subcommittee at our early May meeting, then we will do that as well.

Best,
Alex



Alex Belenz
Planner
North Country Council
161 Main Street
Littleton, NH 03561
(603) 444-6303 x2012

From: Urban, Matt [<mailto:Matt.Urban@dot.nh.gov>]

Sent: Tuesday, April 3, 2018 11:13 AM

To: Alex Belenz <abelenz@nccouncil.org>

Cc: Crickard, Ronald <Ronald.Crickard@dot.nh.gov>; Christine Perron <CPerron@mjinc.com>

Subject: RE: Mitigation Priorities?

Hi Alex,

We were juggling with two scenarios to be honest.

First scenario being that we heard back in short turnaround that there were no priorities, in which case we would plan to discuss an ARM payment with DES on April 18th at our Monthly Natural Resource Agency Meeting.

Scenario two we could push this project out to the May 16th Natural Resource Agency Meeting to discuss viable options then.

We wouldn't want until June because of our project timeline and our need to stay on track with permitting.

So we would at the least need know some of your groups priorities with enough time to try and evaluate them prior to May 16th. (Sounds like it may be beneficial if you targeted a few individuals to have them all reply as individuals with their ideas.) I apologize that this request is coming later in the process than would be ideal.

For some additional information you may find helpful as you and your members consider possible options... If we went down the path of an ARM fund payment we only anticipate it being in the magnitude of approximately \$64,000. (This limits our ability and willingness to take on something that would exceed this amount.)

Thanks,
Matt

From: Alex Belenz [mailto:abelenz@nccouncil.org]

Sent: Tuesday, April 03, 2018 10:57 AM

To: Urban, Matt

Subject: RE: Mitigation Priorities?

Hi Matt,

Thanks for reaching out. When would you like an answer from the Wantastiquet subcommittee by? Their next meeting is not until early May, so that will be the next opportunity for them to formally identify and support mitigation projects. If you need a reply sooner, I could have members reply to indicate potential opportunities as individuals.

Alex



Alex Belenz

Planner

North Country Council

161 Main Street

Littleton, NH 03561

(603) 444-6303 x2012

From: Urban, Matt [mailto:Matt.Urban@dot.nh.gov]

Sent: Tuesday, April 3, 2018 10:51 AM

To: 'hinsdale.nh@myfairpoint.net' <hinsdale.nh@myfairpoint.net>; Alex Belenz <abelenz@nccouncil.org>

Cc: Crickard, Ronald <Ronald.Crickard@dot.nh.gov>; Christine Perron <CPerron@mjinc.com>

Subject: Mitigation Priorities?

Good Afternoon,

The NH Department of Transportation (NHDOT) is planning the construction of a new 1,809-foot bridge carrying NH Route 119 over the Connecticut River on new alignment south of the two existing bridges that currently carry this route over the river between the towns of Hinsdale, NH and Brattleboro, VT. The existing bridges will be retained for bicycle and pedestrian use. The project includes all associated approach and drainage work on NH Route 119 and VT Route 142, as well as the construction of a new sidewalk on the east side of VT Route 142 to a point approximately 1,000' south of the new intersection of NH Route 119 with VT Route 142.

The Department is now in the process of working with our consultants to prepare a wetland application for submission to NH Department of Environmental Services for the proposed work.

Prior to submitting our application we would like input from the Town, Conservation Commission, and/or Connecticut River Wantastiquet Local Advisory Subcommittee, in regards to whether or not you have any mitigation opportunities you would like for the Department to evaluate and consider.

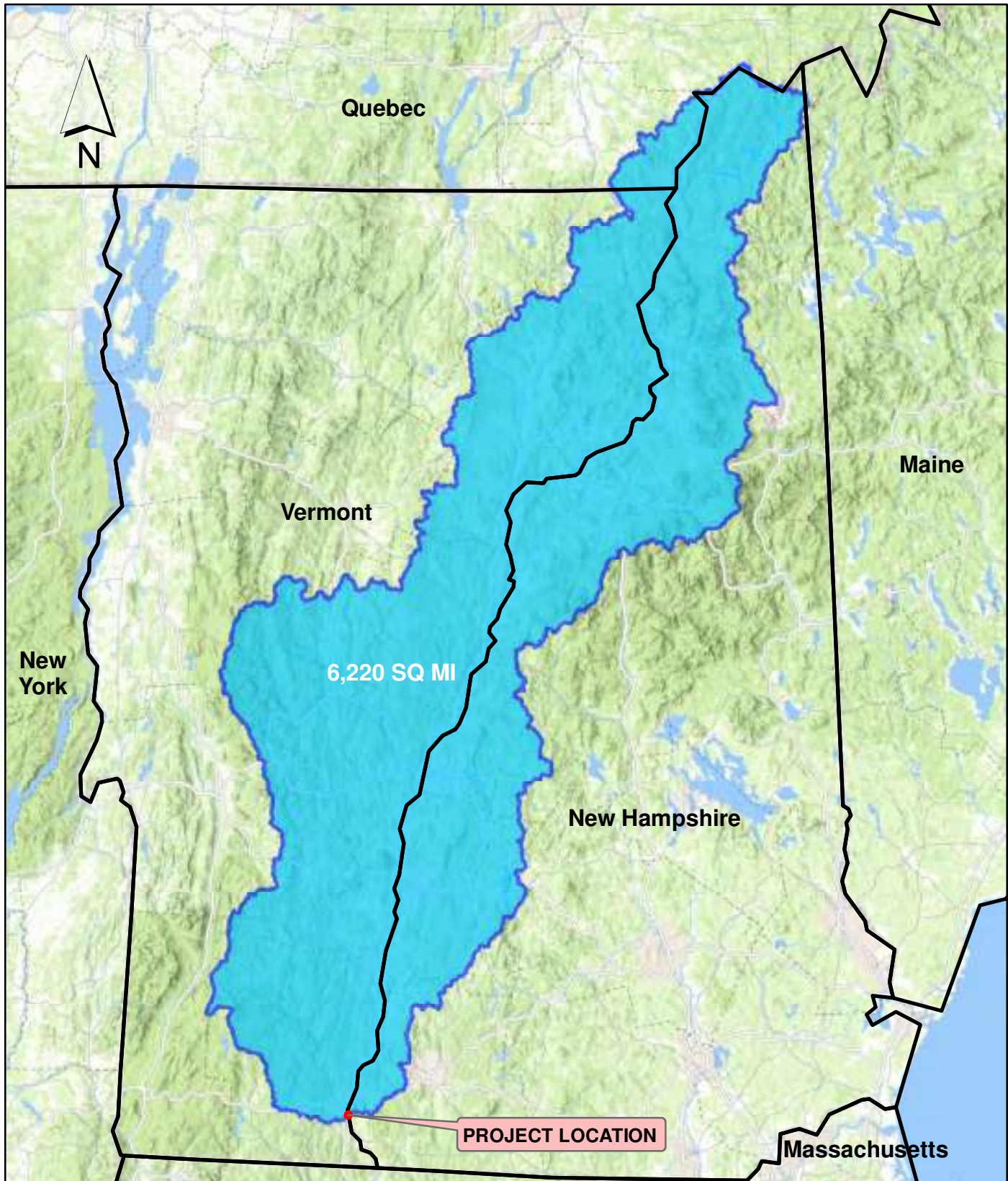
The Department would like to request a list of the Town's preferred/priority mitigation efforts that the Department may evaluate and consider undertaking if it is determined that the project does in fact require mitigation. Please let us know if your Town has identified such priorities. In the absence of any Town priorities to evaluate the Department will pursue permittee responsible mitigation through the Stream Passage Improvement Program (SPIP). If it's determined that no viable options exist through the SPIP, the Department will pursue a

payment into the Aquatic Resource Mitigation Fund (ARM Fund), at which time those funds will become competitively available through the ARM fund grant process.

If you have any questions do not hesitate to contact me via email.

Thank you,
Matt Urban
Wetlands Program Manager
NHDOT Bureau of Environment
Matt.Urban@dot.nh.gov

Watershed Boundary Maps



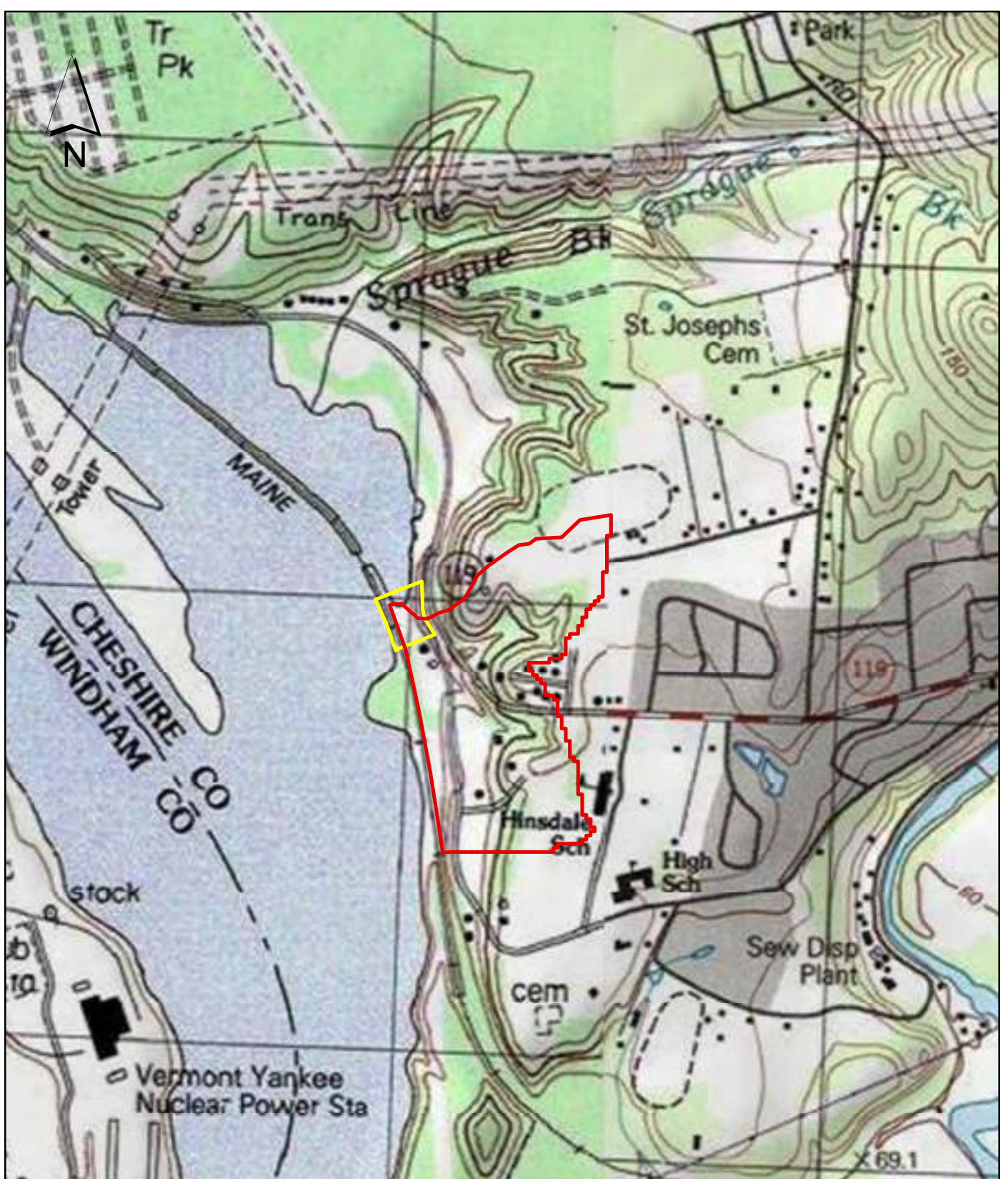
- Connecticut River Watershed
- State Boundaries

NH DEPARTMENT OF TRANSPORTATION
 HINSDALE, NH - BRATTLEBORO, VT, 12210C

WATERSHED MAP

SCALE : 1 inch = 22 miles	DATE : AUGUST 2019	FIGURE : 2a
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- Intermittent Stream Watershed (55 acres)
- Boat Launch Improvements



NH DEPARTMENT OF TRANSPORTATION
HINSDALE, NH - BRATTLEBORO, VT, 12210C

WATERSHED MAP

SCALE :
1 inch = 1,000 feet

DATE :
AUGUST 2019

FIGURE :
2b



Stream Crossing Rules

**NH Department of Transportation
Bureau of Bridge Design
Hinsdale-Brattleboro, 12210C**

Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings

New Tier 2 Crossings;
Replacement Tier 2 Crossings that have a history of flooding;
New & Replacement Tier 3 Crossings

Please describe how the project meets the following criteria:

(a) The crossing shall be designed in accordance with the NH Stream Crossing Guidelines.

The Connecticut River has a watershed size of approximately 6,220 square miles at the location of the proposed NH Route 119 bridge. The bankfull width at the location of the bridges is approximately 1,500 feet. The NH Stream Crossing Guidelines recommends crossings that are at least 1.2 times bankfull width plus 2 feet, resulting in a structure that spans the channel and at least a portion of the floodplain and provides for the adequate passage of water, sediment, aquatic biota, and organic matter at all flow levels.

Based on the metric used in the Stream Crossing Guidelines, the recommended span at this location would be 1,802 feet. The proposed bridge will be 1,809 feet and will span the entire width of the river. There will be six new piers in the river channel and adjacent wetlands, including the mid-channel island, and the bridge abutments will be located above the top of bank. The proposed structure will provide adequate passage of water, sediment, aquatic biota, and organic matter at all flow levels. No riprap will be placed around the piers.

(b) The design shall include bed forms and stream bed characteristics necessary to cause water depths and velocities within the crossing at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the crossing.

Water depths and velocities at the new bridge crossing are expected to be comparable to those found upstream and downstream.

(c) There shall be vegetated banks upstream and downstream of the crossing.

Vegetated banks in the project area will be located north and south of the new bridge.

(d) The natural alignment and gradient of the stream channel shall be preserved so as to accommodate natural flow regimes and the functioning of the natural floodplain.

The existing alignment and gradient of the river channel will not change as a result of this project. The project will result in a slight increase in base flood elevation. A FEMA Conditional Letter of Map Revision will be prepared and submitted to FEMA for approval. However, the slight increase in the base flood elevation is not expected to result in any significant change in the mapped flood hazard zones used for insurance; therefore, the project is not expected to cause or increase flooding on adjacent properties. The existing natural floodplain will continue to function as it does now.

(e) The 100-year flood frequency shall be accommodated to ensure that there is (1) no increase in flood stages on abutting properties and (2) flow and sediment transport characteristics will not be affected in a manner that could adversely affect channel stability.

The project will result in a slight increase in base flood elevation. A FEMA Conditional Letter of Map Revision will be prepared and submitted to FEMA for approval. However, the slight increase in the base flood elevation is not expected to result in any significant change in the mapped flood hazard zones used for insurance; therefore, the project is not expected to cause or increase flooding on adjacent properties. Flow and sediment transport characteristics are not expected to be affected to a degree that would result in channel instability. A hydrologic and hydraulic report is attached.

(f) A natural stream channel shall be simulated through the structure.

The bridge spans the entire width of the river channel and will retain the natural river substrate. Stream simulation is not needed.

(g) Sediment transport competence shall not be altered.

Sediment transport competence will not be altered by the proposed project.

**NH Department of Transportation
Bureau of Bridge Design
Hinsdale-Brattleboro, 12210C**

Env-Wt 904.02 Tier 1 Stream Crossings

The project proposes to install a 12" reinforced concrete pipe (RCP) on an intermittent stream that currently sheet flows across a dirt access road at the boat launch off Prospect Street in Hinsdale, NH. The stream has a watershed area of approximately 55 acres and an average bankfull width of approximately 3 feet. The stream originates to the south of the access road in a forested wetland and flows across the access road into another forested wetland.

(1) The crossing shall meet the general design considerations specified in Env-Wt 904.01, as follows:

Not be a barrier to sediment transport;

The proposed 12" RCP will accommodate sediment transport.

Prevent the restriction of high flows and maintain existing low flows;

The proposed culvert will provide a better hydraulic connection between two forested wetlands. Currently, the stream sheet flows across the access road during normal to higher flows and stops at the access road during low flows.

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

The proposed culvert will facilitate the movement of aquatic life under the access road.

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

The culvert is not expected to increase the frequency of flooding or overtopping of banks.

Preserve watercourse connectivity where it currently exists;

The proposed culvert will preserve the connectivity between the two forested wetlands.

Restore watercourse connectivity where: (1) Connectivity previously was disrupted as a result of human activity(ies); and (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both;

The stream currently sheet flows across an existing access road. The culvert will improve connectivity between the two wetlands.

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

The proposed culvert is not expected to cause erosion, aggradation or scouring. Installing a culvert at this location will prevent future erosion of the roadway caused by the stream flowing across the surface of the road.

Not cause water quality degradation.

The proposed culvert will not cause water quality degradation.

(2) The crossing shall be designed to accommodate the greater of the 50-year frequency flood or applicable federal, state, or local requirements.

The proposed stream crossing will accommodate the 50-year flood frequency. When the culvert reaches capacity at higher stream flows, water will spill over the roadway into the adjacent forested wetland as it currently does.

(3) A Tier 1 stream crossing shall be a span structure, pipe arch, open-bottom culvert, or closed-bottom culvert, with or without being embedded with stream simulation.

The crossing will be a closed bottom reinforced concrete pipe.

Interim Hydrologic & Hydraulic Report

Interim Hydrologic & Hydraulic Report

NH Route 119 Bridge Replacement

Project No. 12210c

Hinsdale, NH

May 9, 2019

I. Introduction

The project involves replacement of the NH 119 highway bridge from Hinsdale NH to Brattleboro VT. The proposed bridge is 4700 ft. upstream from a railroad bridge, and 6 miles upstream from the Vernon Dam. The bridge is 26 miles downstream from the Bellows Fall Dam. The Connecticut River is “regulated” or controlled by several dams. The Vernon Dam increased the normal Connecticut River water surface at the bridge by over 10 ft. when it was constructed in 1908. The two existing bridges span the channels around an island. The main channel piers will be located 1000 ft. downstream from existing bridge 041/040, and Pier 6 of the new bridge will be located in the secondary river channel 200 ft. downstream of bridge 042/044. The new bridge will have six (6) piers in the river, one (1) dry pier, and abutments on the dry banks. The FEMA Flood Insurance Studies (FIS) reference hydrologic and hydraulic studies performed by ENSR, International corp. in 2003 when the effective floodway was lowered. Hinsdale and Brattleboro use the same ENSR model in their respective FIS reports. The regulatory floodplain maps for each community end at the “cooperate limits” which is the western low water line of the river at the state boundary. Further discussion of hydrology and hydraulics is provided in Sections III & IV. Ice jams are known to form in the presence of islands, bridges, confluences of rivers, and narrowing of channels¹. All of these features exist at this site.



Fig. 1: circa. 1897 prior to the Vernon Dam which was built in 1908



Fig 2: Hydraulic locus map

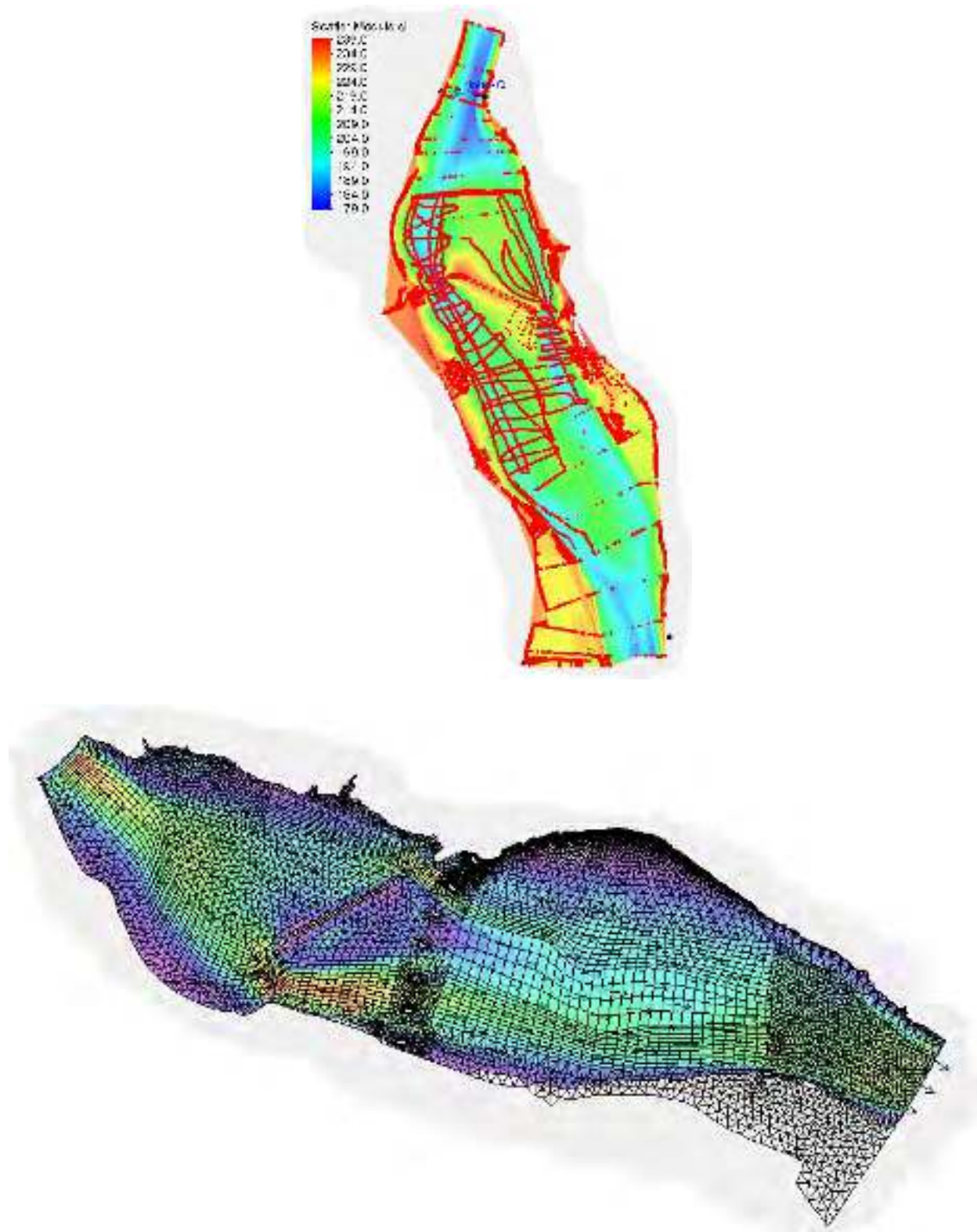


Fig 3. Two dimensional hydraulic model “domain” (upstream to downstream river constrictions)
Red points in scatter set represent data merged from NHDOT 2018 survey, FEMA, and lidar



Fig 4. Historic USGS Quad circa 1893 (reprint 1916)

II. Design Requirements

The NHDOT requirements for the replacement bridge include passing the 100 yr. flood event with a min. of 1 ft. of freeboard, and scour design using HEC 18 methods discussed further on. More detailed scour calculations are included in the final appendix. Freeboard is not a significant design constraint for this bridge.

In accordance with the Federal Emergency Management Agency National Flood Insurance Program (FEMA-NFIP) - the project must limit any increase in the 100 yr. flood elevation caused by encroachments in the floodplain fringe and floodway model. FEMA guidelines and HEC RAS manuals provide information on encroachment analysis methods. NHDOT is a community in the NFIP similar to municipalities. Communities are responsible for prohibiting encroachments including fill, new construction, and substantial improvements within the floodway unless hydrologic and hydraulic analyses show it will not increase flooding levels above target elevations. Fundamentally the NFIP is for insurance of private property where rates are determined based on vertical separation distance from the Base Flood Elevations (BFE). Brattleboro and Hinsdale “corporate limits” extend to the low water line of the Connecticut River which is a dynamic line that is a snap shot in time for the FEMA maps. The future LOMR will also be a snap shot in time regarding the regulatory flood maps and the state line.

The Hydraulic Section developed project HEC RAS models (one dimensional) for the existing regulatory conditions (duplicate effective) and for proposed conditions including the floodway encroachments. The 2003 ENSR geometry was used, but only the relevant sections from the constriction in the river 2500 ft. upstream from NH 119 to the constriction in the river 4000 ft.

downstream (See **Fig. 5**). The effective model was simplified using GIS tools “cut line” data within HEC RAS version 5.0.7. Two new cross sections in the vicinity of the proposed bridge were coded in to the models based on bathymetry acquired in the fall of 2018. The 1d HEC RAS models will be used for a Letter of Map Revision (LOMR) once asbuilts of the new bridge are available. The SRH2d model was created for design purposes, however, it is anticipated that the 2d hydraulics will help inform the final 1d LOMR models in addition to aspects of design, such as scour. Contraction and expansion coefficients are not needed for 2d hydraulics. The depth averaging and finite volume numerical analysis of 2d effectively provides a BFE at each element in the mesh rather than for a single cross section.

Additionally, any fill placed within the limits of the 100 yr. floodplain must be offset by the creation of additional flood storage elsewhere in the floodplain in order to adhere to the Army Corps of Engineers (ACOE) regulations. Fill quantities are best calculated using CAD.

The Department will complete a Letter of Map Revision (LOMR) with all needed coordination with Brattleboro and Hinsdale after the bridge is built. This report recommends that the Department also submit a CLOMR once the bridge foundation plans are complete, or alternatively, with nearly complete foundation plans that can be finished within the 90 day FEMA review period. Using traditional HEC RAS methods the base flood elevation (BFE) may not increase. However, the floodway at FEMA cross section ‘T’ (33.3 in Fig. 5, aka River Station 33,956.3, is predicted to increase by approximately 0.1 ft. using the 1 dimensional HEC RAS analysis. The ENSR models show water surfaces to the 0.01 ft., but the VT community FIS table shows the floodway elevation to the nearest 0.1 ft.

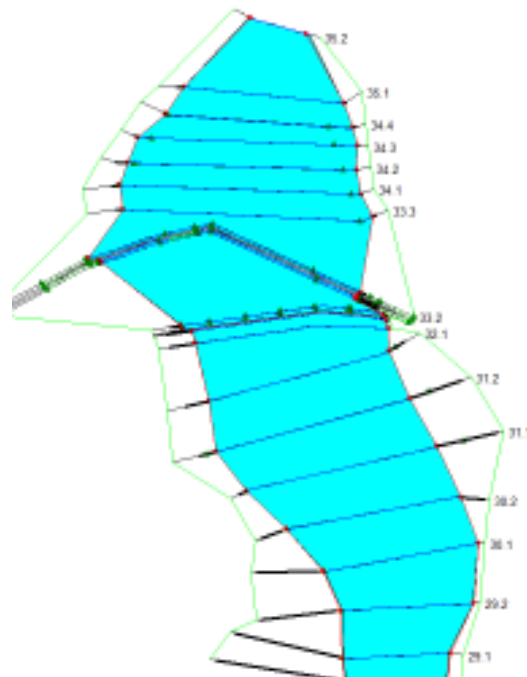


Fig. 5 Depicting the proposed 100 yr. floodway with two new cross sections near new bridge

The multidisciplinary design includes structural elements for the estimated scour depth. Bridge pier scour was calculated using hydraulic parameters for the 100 yr., and 500 yr. events informed by 2d hydraulic modeling (SRH2d / SMS version 13.0.7).

III. Hydrologic Analysis

The effective FIS and supporting models were obtained from the FEMA Engineering Library using the background data request process and the associated fee. The NHDOT Hydraulics Section found the ENSR hydrologic analysis sufficient for bridge design. It was verified that Great Rivers Hydro, LLC also used the same FEMA estimates for a recent analysis of the 100 yr. discharge over the Vernon Dam. The regulatory 100 yr. design flow is 120,300 cfs. at the confluence of the Connecticut River with Whetstone Brook near the existing bridge. The 500 yr. flow at the confluence 134,600 cfs. Moreover, the Federal Energy Regulatory Commission (FERC) requires certifications for dams that include evaluation of hydrology. FEMA provided the hydrologic report prepared by ENSR in 2003 that was used in the effective 1d steady state HEC RAS model. ENSR used Bulletin 17b methods. Future hydrologic study of the Connecticut River will likely use Bulletin 17c methods (revised 2018).

A. Drainage Area – Watershed Characteristics

The drainage area is 6,180 sq. miles. Ice jams have occurred at the bridge based on historic photos. The width and depth of flow of the Connecticut River varies as it collects runoff from tributaries from the western slopes of the White Mountains & the eastern slopes of the Green Mountains. Mean daily flows are available from USGS gages and dams located along the river. There are 148 tributaries of the Connecticut River, and 38 are rivers. Land cover was deforested in the 1800s with higher runoff and erosion, however, modern development has increased the percent of impervious area in the watershed. Climate change is evident in the form of earlier spring runoffs and more frequent hydrologic events like rain with snow melt in the winter season rather than larger snow melt events near the end of winter.

B. Flood Records and Observations

Much reworking of the river has occurred by nature and by railroad and highway construction. Historic photos are available on the [Brattleboro Historical Society website](#). For historic water records the Hydraulics Section reviewed the Department of the Interior Census Office publication Part I of Water-Power of the United States in 1885. Low flows were estimated to be on an average of 0.540 cfs / sq. mile for the years 1872 -1874 when the landscape was largely deforested ($0.54 \times 6,180$ sq. miles = 3337 cfs). Professor Fletcher also obtained measurements of the river in Hanover from 1879 – 1881. A typical daily flow today below the Vernon Dam is less than 10,000 cfs. based on Great River Hydro, LLC observations.

C. Flood Discharges

The NHDOT hydraulic information used for bridge foundation rehabilitation in 1984 is listed on the BRS 270 (6) / S 2875 plans for bridge 041/044. It is also shown below:

HYDRAULIC DATA
Drainage Area: 6195 square miles
*Design Flow: 1,100 * 102,000 cfs (Q₅₀₀ = * 92,500 cfs)*
Design Velocity: 9.6 feet per second
Design Flood Elevation: 232.0
Area of Bridge Opening below El. 232.0: 6880 sq. ft.
Normal Pool Water Elevation: 220.0 (+)

As mentioned above, the FEMA effective 100 yr. estimate is 120,300 cfs, and it was used to develop depth averaged velocity profiles in a two dimensional hydraulic model that vary from less than 1 fps near the river banks to as high as 7.5 fps discharging from bridge 041/44 in the secondary channel along the NH side of the river. The average velocity from the effective FEMA model is 3.6 fps in the vicinity of the new bridge. Velocities predicted for the 500 yr. storm are similar to those for the 100 yr. runs. Depths are significantly more for the 500 yr. event.

IV. **Hydraulic Analysis** – NAVD 88 vertical datum

A. NHDOT Methodology

The Hydraulics Section performed the analysis for project 12210c. The extents or “domain” of the models are between the river constrictions upstream and downstream from the project. Moreover, the results from the 2d model were compared with the effective 1d model and a new 1d developed by the author.

A 2d hydraulic model was built to apply finite volume methods and depth averaging equations for scalar and vector hydraulic parameters including water surface elevations, depths at specific locations, velocities, and the angles of attack on individual piers. Conservation of mass and continuity were verified at key points in the 2d model. To date the model provides non-calibrated divided flow derived from the river bathymetry near the existing bridges, but the results correlate well with the calibrated FEMA models developed by ENSR in 2003. The bathymetry was acquired in September and October 2018 by a NHDOT survey crew. Best available information was merged including: ENSR bathymetric cross sections, lidar, and Department surveys. One topographic survey not used (circa 1980) shows a twelve foot deep scour hole under bridge 042/044 (NH side). Land cover and channel polygons were defined and assigned Manning’s roughness. Boundary conditions for the model were defined at the upstream and downstream limits. Pier footings and other bridge components were merged into domain polygons effectively creating vertical wall boundary conditions in the model at each pier obstruction. Each pier was treated as a hole in the mesh. An hydraulic mesh was developed from the merged domain

coverages that included CAD files. The model was run for the 2 yr., 100 yr., & 500 yr. events. Lastly, vector and scalar quantities were obtained at key locations within the model using “observation arcs” for pier scour calculations, design water surfaces and for validating the floodplain and floodway models.



Left photo is near future Pier #6, and right photo is between Pier #3 & #4

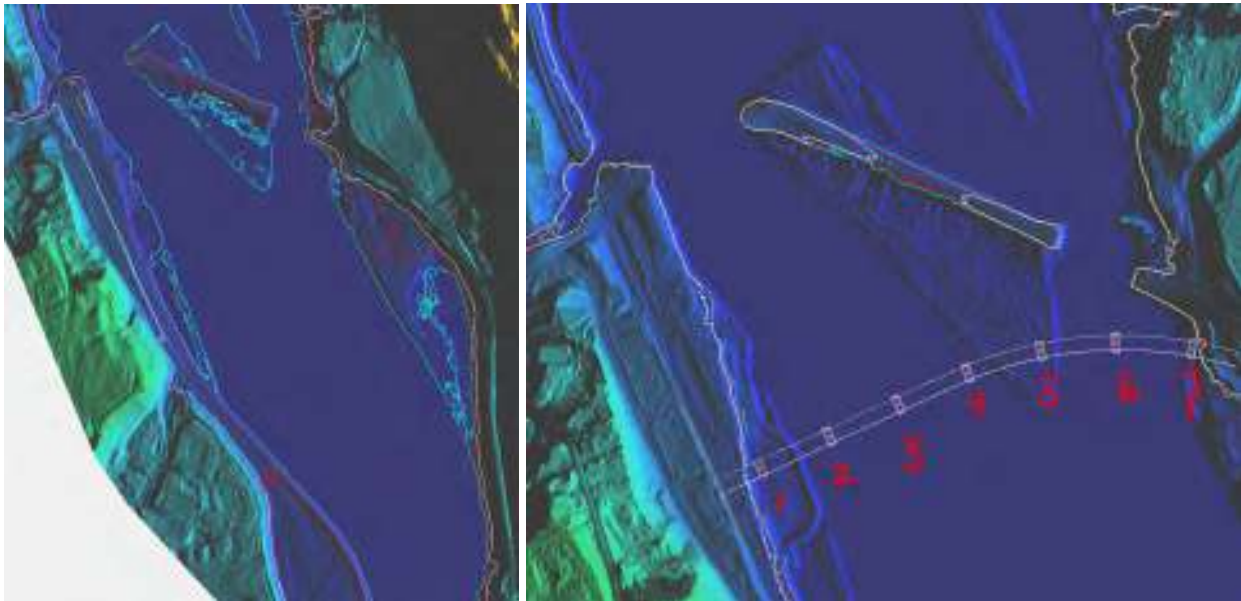


Fig. 6 lidar elevation contours: 240 shown white, 230 red & 220 cyan

B. FEMA NFIP FIS Methodology

The effective FIS model for the Connecticut River used conveyance perpendicular to the defined cross sections and structures were coded into HEC RAS by ENSR using the geometric editor. The average 100 yr. velocity in the effective FEMA model at X-Section ‘S’ near the proposed

bridge is 3.6 fps (**Table 2** below is Table 3 on pg. 18 of the ENSR hydraulic report, profiles are shown on pg. 112 of the Hinsdale FIS).

Table 2:



Table 3: Open Water Flood Profile Table

River Station (ft)	Cross Section ID	Annual Chance Flood Stage			
		0.1 (ft)	0.2 (ft)	0.01 (ft)	0.002 (ft)
251	A	220.76	223.87	225.84	230.47
1,340	B	221.06	224.17	226.11	230.60
4,501	C	221.5	224.57	226.46	230.95
6,123	D	221.63	224.68	226.56	231.03
8,732	E	222.07	225.02	226.78	231.15
11,765	F	222.33	225.23	226.85	231.25
12,753	G	222.30	225.26	226.97	231.25
16,222	H	223	225.85	227.48	231.62
17,722	I	223.31	226.10	227.79	231.68
22,721	J	224.18	227.03	228.56	232.42
27,820	K	224.95	227.07	229.23	232.93
28,875	L	225.23	228.22	229.59	233.28
32,225	M	225.08	228.92	230.29	233.94
33,856	N	226.52	229.67	231.04	234.84

The proposed bridge is located between FEMA cross sections S & T (the existing bridges are also between these sections). The NHDOT downstream model boundary is near FEMA cross section R (known water surface of 229.59 w/out floodway and 229.99 w/floodway). The Base Flood Elevation (BFE) is 230.3 at S and 231.0 at T. The floodway elevation at T is 231.4.

The Connecticut River floodway was determined by “detailed methods” as part of the FIS report dated October 15, 1980 for Hinsdale. Environmental Engineers, Inc. completed the work for FEMA in December 1978 (Contract No. H-4590). ENSR updated the hydrologic and hydraulic models in 2003, and lowered the floodway as a result.

The Vermont NFIP work was completed in November 1983 by Dufresne-Henry, Inc. for FEMA under contract No. EMW-C-0683. The Vermont FIS for Windam County was published December 4, 1985. Brattleboro Vermont currently uses the same 2003 ENSR study for their NFIP community panels. Hinsdale and Brattleboro have used the same effective FEMA models since 2003.

The ENSR model used an open area width of 248.83 ft. for the span w/piers, and a width of 334.5 ft. for the main span across the Connecticut River to the Vermont side. The FEMA river profile and regulatory water surfaces are shown in **Fig 8** on pg. 12. **Fig 9** depicts the ENSR channel and bridge openings in the 2003 model. Velocities, depths, and water surfaces from the 2019 NHDOT SRH 2d model are shown in **Fig. 10**.

River geometry did not allow for equal conveyance on each side of the floodplain. Fixed encroachment stations were manually set in the floodway model using Method 1 as detailed in the HEC RAS manual. Method 4 was first used for the new river stations immediately upstream and downstream of the proposed bridge. Method 1 was then used to set the encroachment station as shown in **Table 3** below. The figure to the right of **Table 3** depicts the new floodway encroachments (effectively blocking flow behind the outer most piers). Piers in HEC RAS are numbered from 1 to 7 automatically, but in reverse to labels shown in **Fig 6**.

Table 3

Encroachments

Equal Conveyance Methodology

Left bank offset: 0 Right bank offset: 0

River: CT Profile: 100 yr

Reach: 122305 Import to Method 1

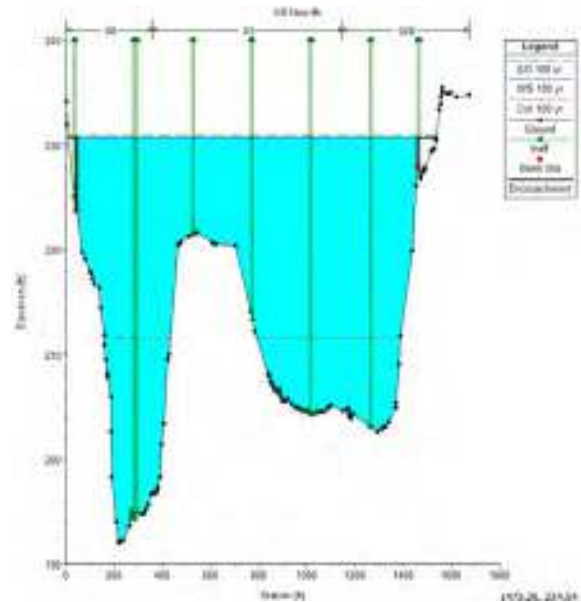
Set Range of Values

Upstream RC: 32.2 Method: none

Downstream RC: 26.1 Value 1

Not selected Range Value 2

River Sta	Method	Value 1	Value 2
1.125.3	21	58.8	1059
2.126.1	3	180.40	1295.4
3.124.4	3	92.84	1382.67
4.124.2	3	73.31	1584.71
5.124.2	3	99.35	1674.26
6.124.1	2	182.04	1764.35
7.123.3	3	122.35	1854.17
8.122.8	3	727.37	1899.4
9.122.18	985		
10.122.1	3	320.4	1847.04
11.122.5	3	42.87	1481
12.122.25	985		
13.122.2	3	23	1383
14.122.1	3	179.53	1629.01
15.121.2	3	429.11	1503.14
16.121.1	3	480.73	1670.83
17.120.2	3	193.57	1442.01
18.120.1	2	45.21	1141.89
19.120.3	3	51.83	958.65
20.120.1	3	99.34	805.32
21.120.1	3	186.27	800.47



The effective FEMA floodway from the ENSR model is detailed in **Table 4**, and the proposed project floodway is detailed in **Table 5** on page 11.

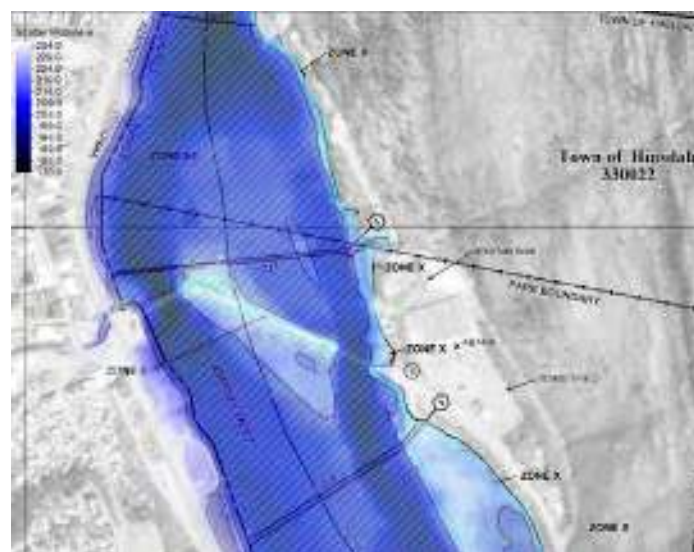


Fig. 7 Effective FEMA cross sections T & S

Table 4: HEC RAS for effective floodway using encroachment Method 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch B (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Ch
1	31222.13	100_Year	20300.00	189.70	231.09	206.54	231.23	0.000075	3.08	39034.95	1727.25	0.11
1	31222.13	Floodway-Prev	20300.00	189.70	231.51	206.54	231.65	0.000071	3.03	39679.71	1661.51	0.11
1	31222.13	Floodway	20300.00	189.70	231.45	206.54	231.59	0.000072	3.04	39586.59	1661.51	0.11
1	33056.3	100_Year	20300.00	183.25	231.04	208.57	231.21	0.000141	3.30	36547.21	1805.62	0.12
1	33056.3	Floodway-Prev	20300.00	183.25	231.46	208.57	231.63	0.000132	3.24	37263.27	1807.32	0.12
1	33056.3	Floodway	20300.00	183.25	231.40	208.58	231.57	0.000136	3.27	36773.63	1751.82	0.12
1	33702.25	100_Year	20500.00	175.98	230.42	204.06	231.07	0.000604	6.10	19508.87	1609.04	0.21
1	33702.25	Floodway-Prev	20500.00	175.98	230.87	204.06	231.45	0.000477	6.09	19364.57	1600.67	0.20
1	33702.25	Floodway	20500.00	175.98	230.80	204.06	231.39	0.000605	6.11	19714.89	1572.08	0.20
1	34945.7	Mill Dam										
1	33395.07	100_Year	20500.00	177.25	230.27	204.58	230.89	0.000217	5.35	19178.67	1479.90	0.20
1	33395.07	Floodway-Prev	20500.00	177.25	230.72	204.58	231.32	0.000208	5.27	19467.09	1517.63	0.19
1	33395.07	Floodway	20500.00	177.25	230.65	204.58	231.25	0.000215	5.29	19261.92	1374.38	0.19
1	32221.63	100_Year	20500.00	191.51	230.29	210.22	230.18	0.000100	3.59	34728.60	1610.01	0.13
1	32221.63	Floodway-Prev	20500.00	191.51	230.74	210.22	230.93	0.000091	3.52	35141.92	1660.01	0.12
1	32221.63	Floodway	20500.00	191.51	230.66	210.22	230.85	0.000101	3.63	33214.87	1349.18	0.13
1	31721.38	100_Year	20500.00	194.37	230.24	210.03	230.42	0.000117	3.44	35160.54	1894.65	0.12
1	31721.38	Floodway-Prev	20500.00	194.37	230.69	210.03	230.87	0.000113	3.41	35329.79	1444.05	0.12
1	31721.38	Floodway	20500.00	194.37	230.62	210.04	230.80	0.000114	3.42	35225.65	1444.05	0.12

Table 5: HEC RAS for proposed floodway using encroachment Method 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch B (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Ch
12210R	33.3	2 yr	30000.00	183.25	229.70	197.60	229.71	0.000611	0.88	34305.06	1800.30	0.03
12210R	33.3	100 yr	120300.00	183.25	231.48	208.59	231.64	0.000134	3.28	36900.21	1731.82	0.12
12210R	33.3	200 yr	125000.00	183.25	231.77	208.92	231.54	0.000136	3.32	37772.07	1809.66	0.12
12210R	33.3	500 yr	134600.00	183.25	232.26	209.37	232.45	0.000147	3.50	38565.46	1813.99	0.13
12210R	33.2	2 yr	30000.00	175.98	229.66	192.31	229.70	0.000601	1.59	19027.51	1606.25	0.05
12210R	33.2	100 yr	120300.00	175.98	230.89	204.05	231.46	0.000499	6.08	19771.51	1572.03	0.20
12210R	33.2	200 yr	125000.00	175.98	231.14	204.40	231.75	0.000497	6.25	20137.00	1611.60	0.21
12210R	33.2	500 yr	134600.00	175.98	231.56	205.37	232.24	0.000608	6.63	20451.18	1613.18	0.22
12210R	33.15	Bridge										
12210R	33.1	2 yr	30000.00	177.25	229.65	193.09	229.69	0.000614	1.65	18745.00	1429.98	0.05
12210R	33.1	100 yr	120300.00	177.25	230.70	204.65	231.09	0.000615	6.25	19345.56	1378.74	0.19
12210R	33.1	200 yr	125000.00	177.25	231.03	205.09	231.67	0.000617	6.44	19651.93	1528.91	0.20
12210R	33.1	500 yr	134600.00	177.25	231.42	205.89	232.15	0.000643	6.85	19999.15	1538.35	0.21
12210R	32.3	2 yr	30000.00	191.08	229.65	205.60	229.66	0.000617	1.07	28775.77	1514.93	0.04
12210R	32.3	100 yr	120300.00	191.08	230.71	211.63	230.97	0.000653	4.07	29585.79	1418.13	0.15
12210R	32.3	200 yr	125000.00	191.08	230.96	211.86	231.22	0.000668	4.17	30194.34	1533.01	0.16
12210R	32.3	500 yr	134600.00	191.08	231.35	212.36	231.65	0.000681	4.41	30773.67	1535.26	0.16
12210R	32.25	Bridge										
12210R	32.2	2 yr	30000.00	190.05	229.64		229.66	0.000608	0.98	31413.96	1530.08	0.04
12210R	32.2	100 yr	120300.00	190.05	230.68		230.90	0.000616	3.80	31888.77	1342.00	0.14
12210R	32.2	200 yr	125000.00	190.05	230.93		231.16	0.000616	3.83	33386.18	1536.65	0.14
12210R	32.2	500 yr	134600.00	190.05	231.33		231.58	0.000627	4.06	33993.23	1537.25	0.15
12210R	32.1	2 yr	30000.00	191.54	229.64	202.33	229.66	0.000607	0.92	33428.46	1609.15	0.03
12210R	32.1	100 yr	120300.00	191.54	230.66	210.21	230.86	0.000600	3.62	33213.46	1349.48	0.13
12210R	32.1	200 yr	125000.00	191.54	230.92	210.47	231.12	0.000609	3.62	35120.32	1665.08	0.13
12210R	32.1	500 yr	134600.00	191.54	231.31	210.58	231.53	0.000609	3.81	36041.43	1679.22	0.13

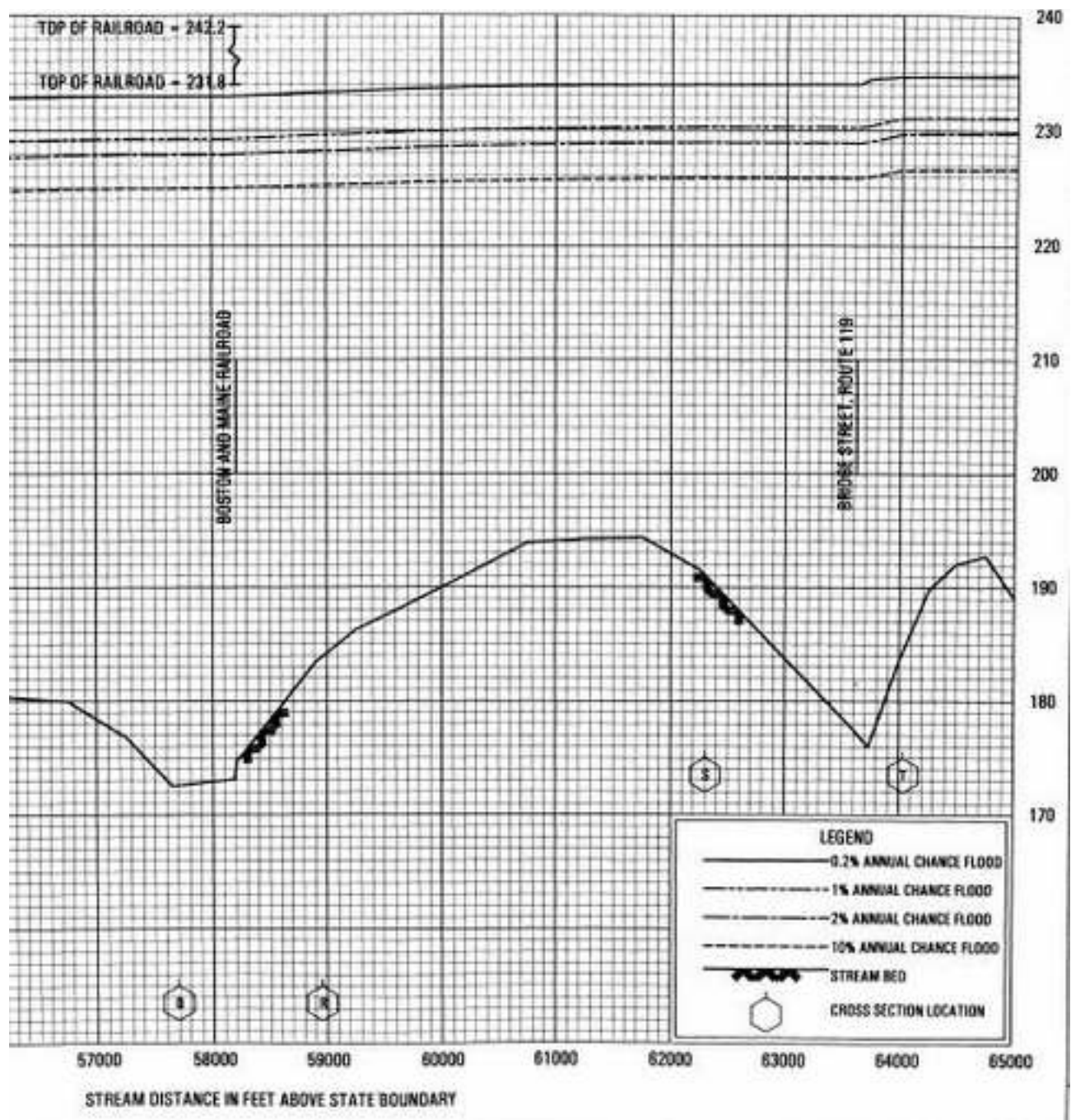


Fig. 8

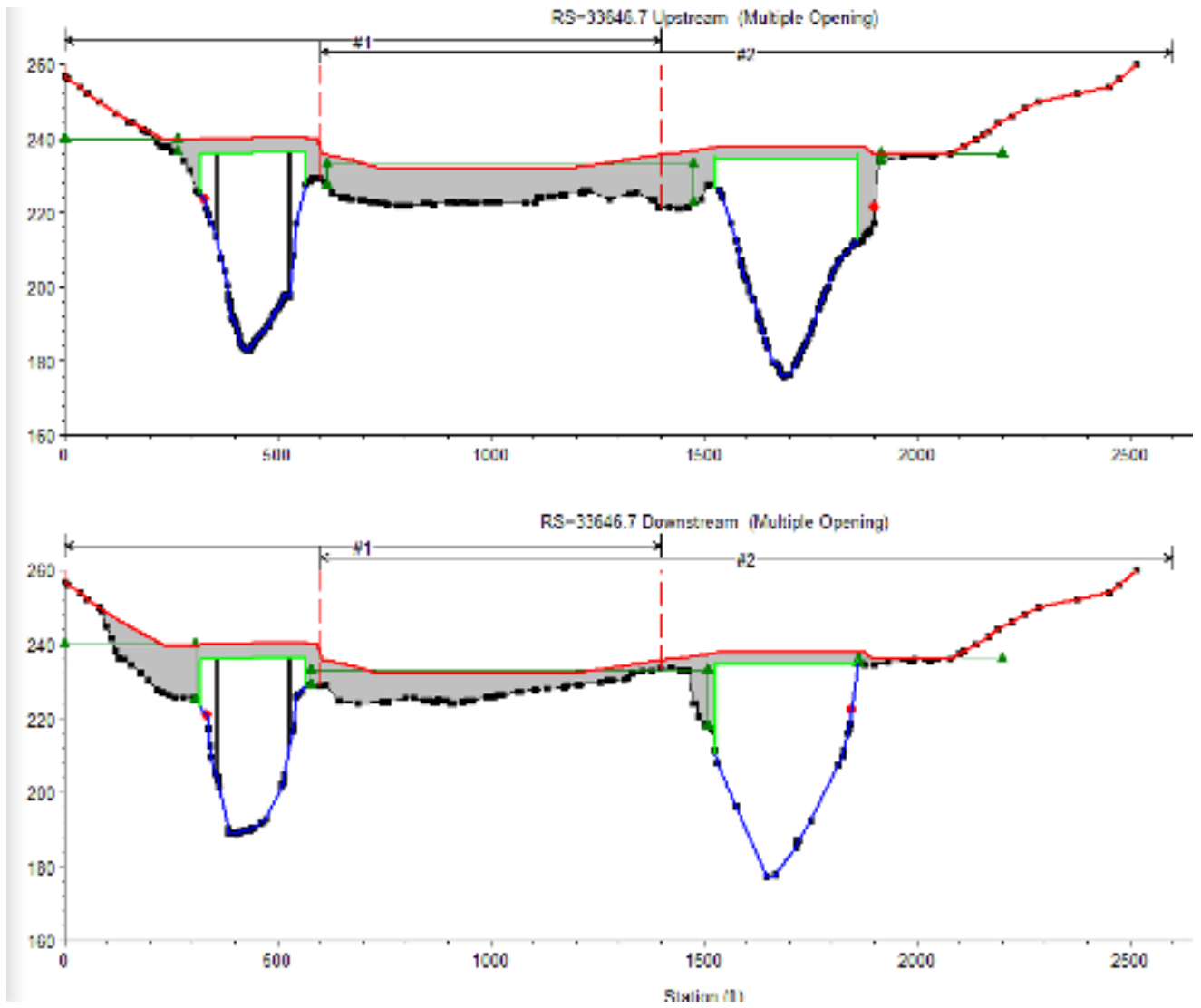


Fig. 9 HEC RAS X-Sections upstream & downstream of the existing bridge

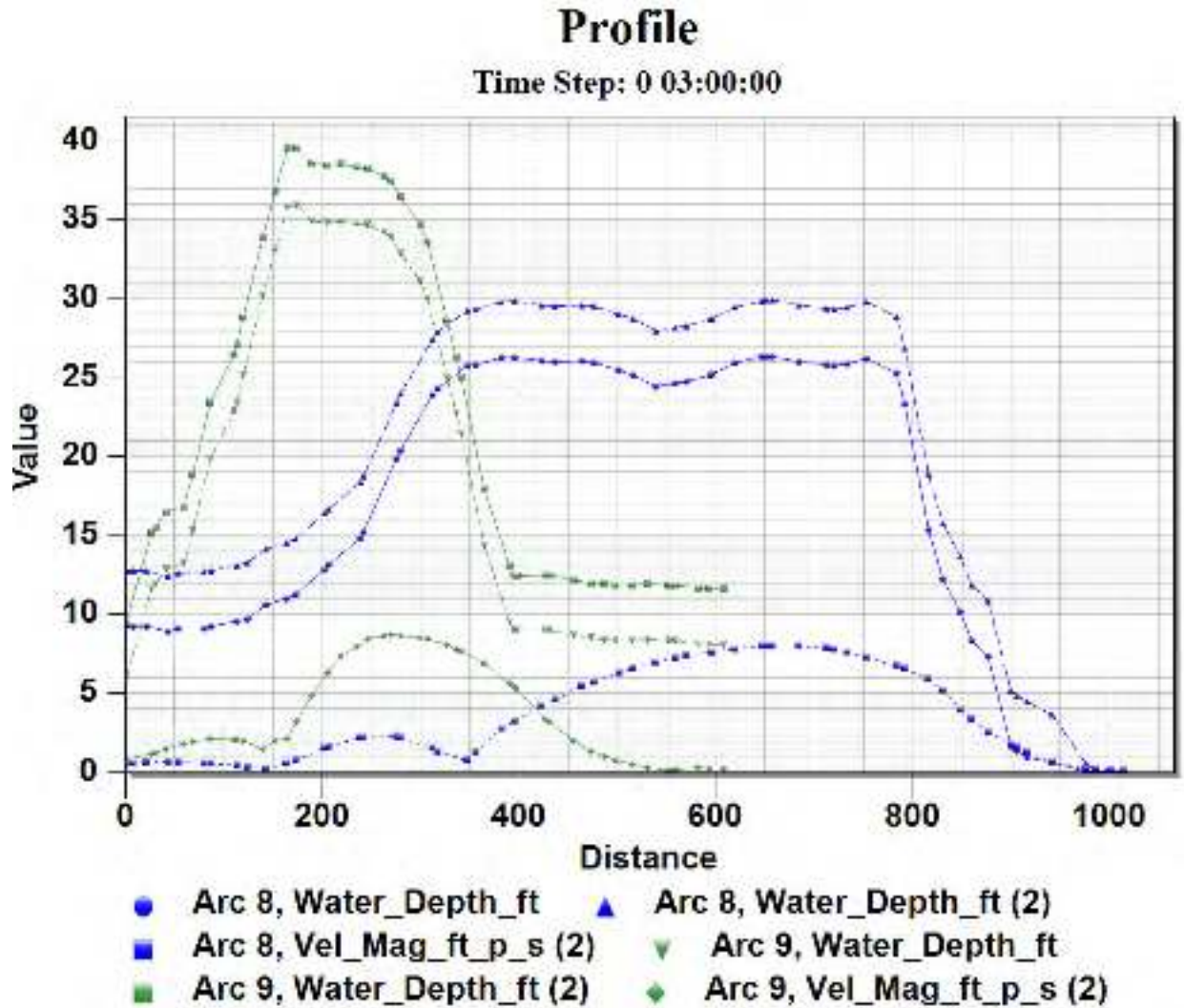


Fig. 10 100 & 500 yr. velocity and depths across the entire river upstream of proposed bridge (two dimensional SRH 2d model)

C. NHDOT Proposed Design

The proposed bridge will carry NH 119 across the Connecticut River between Hinsdale, NH and Brattleboro, VT. The realignment of the roadway will bypass the existing roadway which currently crosses from NH to an island and then from the island to VT over two bridges. The new crossing will be 200 ft. downstream from the existing bridge on the NH side and approximately 1000 ft. downstream of the bridge from the island to VT that spans the main channel of the river. The two existing bridges will remain in place after completion of the new bridge. Some or all of the roadway pavement will be removed, but not on the bridges.

The new structure:

- will consist of an 8 span, continuous, steel multi-girder superstructure with exterior spans of 153' and interior spans of 246' for a total centerline of abutment to centerline of abutment length of 1782'.
- will carry one 12' wide travel lane in each direction with 8' wide shoulders and a 6' wide sidewalk on the upstream side of the bridge for a total out-to-out bridge dimension of 49'.
- will be on a tangent alignment for the first 833'-4 1/4" and then follow a curved alignment for 948'-7 3/4" (radius 1312').
- will have six (6) river piers and one (1) land pier - all consisting of steel reinforced, solid wall piers supported on steel reinforced footings. The placement of the piers provides a uniform span layout. The footings will be supported on piles, or drilled shafts. In addition, all river piers will be tapered in the vertical direction.
- will have cofferdams installed at each river pier. Provided the foundation design remains as currently designed, concrete tremie seals will be poured into each cofferdam to counter hydrostatic pressures and allow construction of the pier footings and stems in the dry.
- will not rely on constructed rip-rap or other scour counter measures in conformance with FHWA HEC 18.
- will not have vertical encroachment of the bridge superstructure into the 100 year flood plain or floodway.
- Will minimize fill in the fringe floodway to satisfy ACOE mitigation requirements.

V. Scour

Summary information to date for the complex pier method detailed in HEC 18 is shown below. Piers are numbered left to right looking upstream in **Table 5**. Total scour may change based on the final foundation design.

Table 5:

Pier No.	Velocity	Depth	Angle of Attack	Begin River Bed Elev.	Total Scour (ft.)
1	1 fps	9.6 ft.	1 degree	224.0	5.25 ft.
2	4.5	25.0	3	203.2	14.36
3	4.5	25.0	5	204.7	16.89
4	3.1	29.3	22	209.3	24.92
5	0.7	13.1	88	220.8	7.35
6	7.1	40.0	10	193.7	26.21
7	1.8	12.2	22	220.0	11.32

Pier 4 and Pier 6 are the most susceptible to scour, and they have required the most hydraulic, geotechnical, and structural engineering. All pier scour supporting calculations are provided in the appendix.

The 500 yr. calculated velocity and depth upstream of Pier #4 and Pier 6 are shown in the typical profile plots on page 16 and 17.

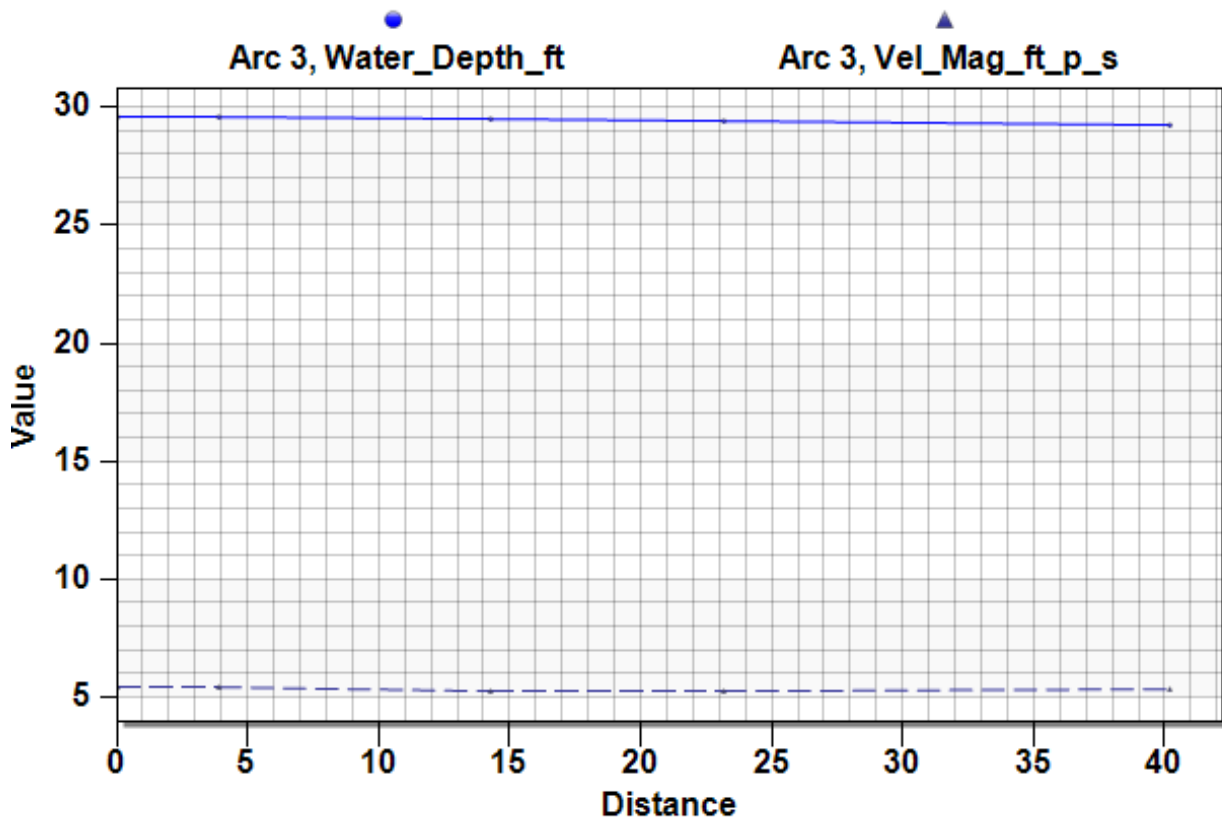
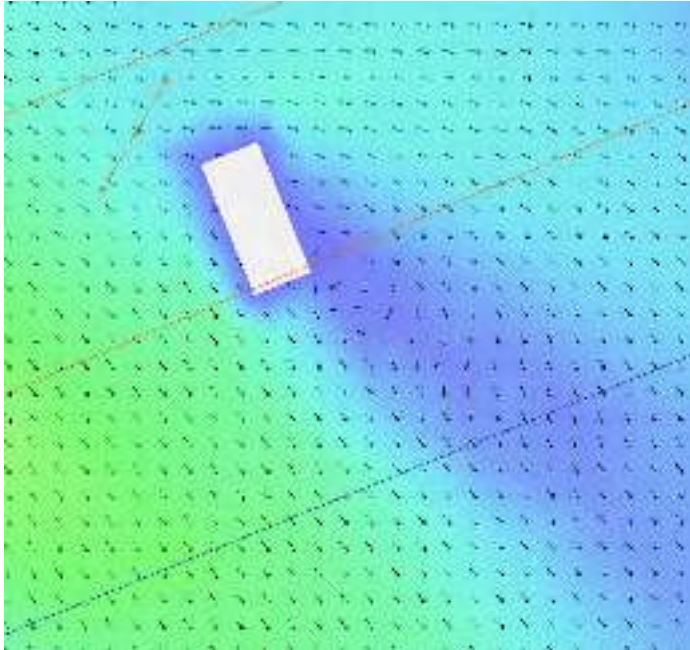


Fig. 10 Hydraulic parameters for Pier 4

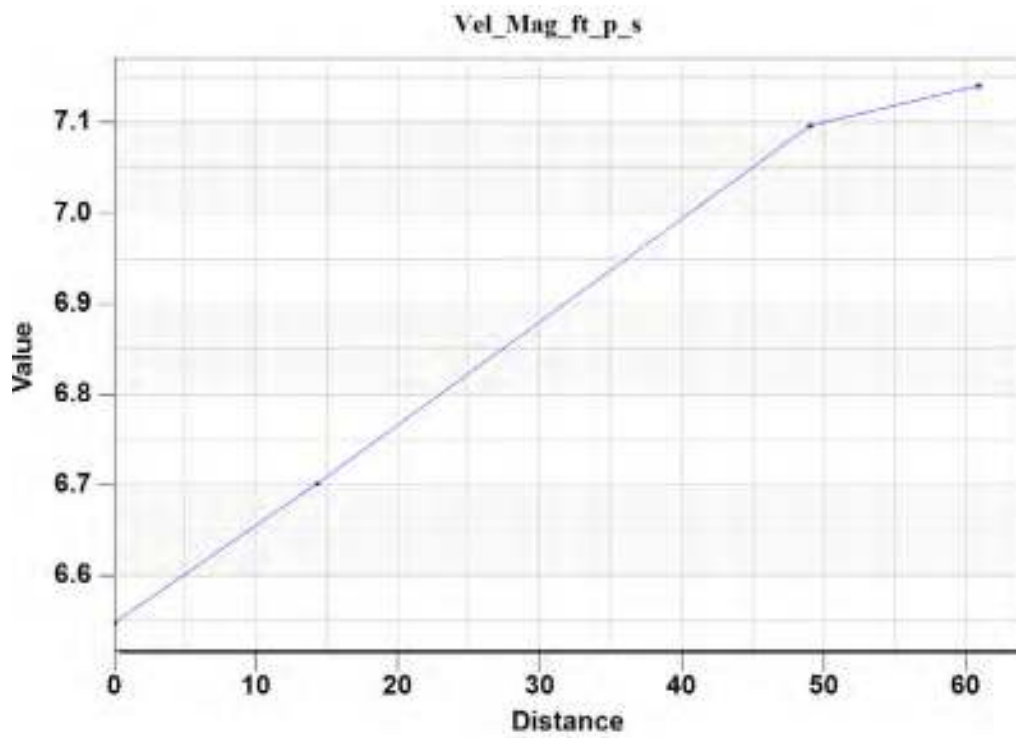
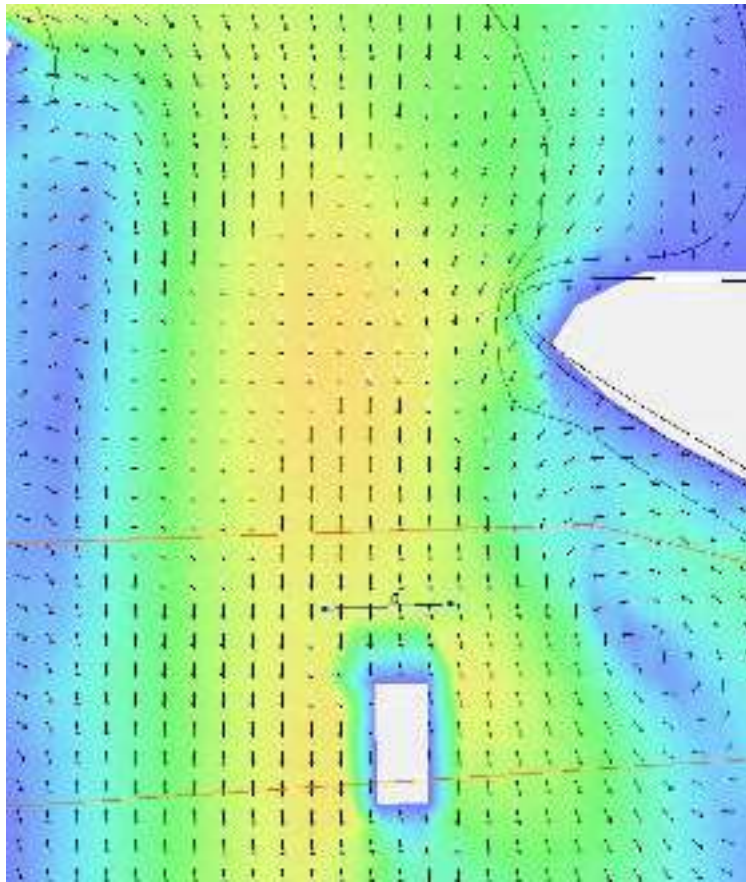


Fig. 11 Hydraulic parameters for Pier 6

VI. Interim conclusion and next steps

The 2d hydraulic model provides more accurate hydraulic parameters than 1d RAS. Local velocity, depth of flow around piers, and a better understanding of the flow split around the island was made possible by 2d hydraulic modeling performed by the NHDOT Hydraulics Section. The 2019 NHDOT analysis also improves hydraulics for the existing bridges.

The Department obtained bathymetry (soundings) for most of the model domain, however, gaps still exist at the upstream and downstream limits of the models. The new models are not yet calibrated, but they compare well with the effective FEMA models completed by ENSR that were calibrated in 2003. Great River Hydro reported an estimated peak flow of 76,700 cfs over the Vernon Dam on April 16th 2019 and a water elevation of 220.6 ft. at the dam. Typical daily flows over the Vernon Dam are less than 10,000 cfs.

The LOMR models will include the most current bathymetry and survey measurements from the project files, and the Hydraulics Section used the best available information to date as described in Section IV. The Department should continue to maintain good communication with the communities, the Vermont Department of Transportation, and with the respective NFIP floodplain coordinators for NH & VT. The effective floodway elevation is 231.4 at cross section 'T', aka 'N' in some models, (River Station 33,956) – Refer to **Fig. 7** on page 10 of this report. The NHDOT Hydraulic Section calculated a proposed floodway water surface of 231.48 using HEC RAS and the most current foundation information. Floodways must be calculated using 1d cross sections. The proposed floodway elevation could be slightly less if more efficient expansion and contraction coefficients are used for cross section T. The effective FIS model uses coefficients that are typically used for bridge sections probably because the ENSR modeler recognized that the island divides the flow. A 2d hydraulic model does not require expansion and contraction coefficients, because the flow split is calculated using the river bathymetry.

This author recommends submitting a CLOMR sooner rather than later based on discussions and changes to the 1d HEC RAS models made in the past week. It appears that the exiting project schedule can accommodate the estimated CLOMR if the application is submitted to FEMA in June 2019. Provided the low water line is shown correctly on the effective FEMA maps (community panels), there will be no significant change in the mapped flood hazard zones or BFE used for insurance. Should the state boundary line need reconciliation with the FEMA corporate limits it can be easily accomplished by overlaying the existing Department survey.

The actual modeled regulatory floodplain includes both sides of the corporate limits of the respective FIS studies for New Hampshire & Vermont.

Summary of Species of Concern

Hinsdale, NH – Brattleboro, VT 12210C

NH Route 119 Bridge Project

Species of Concern

Aquatic Plants (flat-stem pondweed, grass-leaved mud-plantain, long-leaved pondweed, pygmy weed, Vasey's pondweed)

McFarland Johnson completed two surveys for aquatic plants at the proposed bridge site (August 2018 and July 2019) and one survey at the downstream boat launch (July 2019). Long-leaved pondweed and grass-leaved mud-plantain have been documented in the vicinity of the bridge site. MJ confirmed the presence of grass-leaved mud-plantain and identified potential long-leaved pondweed. Although diagnostic characteristics of the pondweed could not be confirmed during either survey, the NH Natural Heritage Bureau determined that it was possible that the plants that are present could be long-leaved pondweed. The Natural Heritage Bureau concurs with the proposed measures to avoid and minimize impacts to rare plants are summarized below (see measures #4, 5, and 6).

Wetland Plants (Houghton's umbrella sedge, lesser clearweed)

McFarland Johnson completed a survey for these species in July 2019. The survey area consisted of the southern end of the island and wetland areas in the vicinity of the boat launch. Neither of these species was identified.

Recorded Wildlife

Bald Eagle – NH Fish and Game does not anticipate impacts since proposed work activities will not occur within a ¼ mile of known nest sites.

Small-footed Bat – There is no suitable habitat (ledge, talus slopes) for small-footed bat in NH; therefore, no impacts to this species are anticipated in NH. The only potentially suitable habitat for this species within the Vermont project area consists of a stone retaining wall along VT Route 142. Since only the lower portion of the wall will be impacted, it is unlikely that the project will impact this species. Project information was sent to VT Fish & Wildlife; no reply has been received. Two buildings will be removed as part of this project: a two-story house located above the stone retaining wall and a warehouse structure, known as the Blue Seal Building, located on the east side of VT142. Since these buildings have not been surveyed for bats, they will be removed during the winter to minimize potential impacts (see avoidance and minimization measure #2 below).

Shortnose Sturgeon – NH Fish and Game and the NOAA Greater Atlantic Fisheries Office agree that the project is not expected to impact sturgeon since this species has not been documented upstream of the Vernon Dam.

Riparian wildlife – NH Fish and Game requested that the use of plastic erosion control matting be avoided to prevent trapping and killing snakes, birds, and other wildlife utilizing the riparian habitat. See avoidance and minimization measure #1 below.

Federally Listed Species

Northern Long-Eared Bat – The project was reviewed under the FHWA Programmatic Consultation for Northern Long-eared Bat. It was determined that the proposed project may affect, is likely to adversely affect (LAA) northern long-eared bat due to active season tree clearing. The USFWS confirmed that the project is consistent with the Programmatic Biological Opinion and is therefore not likely to jeopardize the continued existence of the northern long-eared bat.

Dwarf Wedgemussel – A dive survey was completed in 1999, and a shoreline survey was completed in 2009. No dwarf wedge mussels were found during either survey. The project area is outside the known extent of dwarf wedgemussel populations in the Connecticut River and the USFWS has no concerns with the project.

Fisheries

Essential Fish Habitat – The river is designated as EFH for all life stages of Atlantic salmon. However, the National Marine Fisheries Service has suspended EFH consultation for projects on the Connecticut River. No further EFH consultation is required for this project.

American Shad – The American shad is protected under the Anadromous Fish Conservation Act and restoration efforts are underway from Maine to Virginia. The restoration of American shad in eastern Atlantic rivers is a cooperative effort between the USFWS, other Federal agencies, State fish and wildlife agencies located within the watershed, non-governmental organizations and the fishing industry. Shad inhabit oceanic waters and migrate into freshwater rivers to spawn. Shad migration into the Connecticut River occurs primarily between early May and mid-June, with spawning occurring as far north as Saxtons River, VT, approximately 30 miles north of the project. Following coordination with NH Fish & Game and VT Fish & Wildlife, it was determined that elevated underwater noise levels associated with pile driving were the primary concern during construction of the new bridge. The estimated area impacted by underwater noise will extend approximately 300 feet from each pile as it is driven (based on NOAA's acoustic calculator). The width of the river channel to the west of the island is approximately 800' and the width of the river channel to the east of the island is approximately 500'. This means that there will always be a large portion of the river that is not impacted by noise during pile driving where shad can take refuge. If the Contractor chooses to drive piles at more than one location at a time, the Contract will contain language that requires more than 600 feet between any pile driving activity so that there is always a safe zone of passage for fish that remains unimpacted by noise from pile driving. Additionally, it has been documented that shad spawning takes place at night, and pile driving will take place during daylight hours only, which would reduce impacts to shad that may be spawning in the vicinity of the project. See avoidance and minimization measures #3 and #6 below.

Vermont Plants

In a response dated January 8, 2018, the Vermont National Heritage Inventory identified records for lace love-grass (*Eragrostis capillaris*), nodding spurge (*Euphorbia nutans*), and snail-seed pondweed (*Potamogeton bicupulatus*) within the Vermont portion of the proposed project, and many other rare species known to occur downstream of the project area. In the Vermont portion of the study area, the following areas were surveyed:

- Along the west side of the river, an approximately 1.3-acre backwater area was surveyed and no rare species were identified.

- The railroad corridor and river bank within the Vermont study area were surveyed on foot by one staff person on August 8, 2018 and no rare plants were identified.

The VT Department of Fish & Wildlife has no further concerns with rare plants in the project area.

Avoidance and minimization measures to be implemented during construction:

1. The use of wildlife-friendly degradable woven silt socks and/or coco or jute erosion control matting will be required.
2. Buildings in Vermont will be removed during the non-active season for bats.
3. To minimize impacts to spawning American shad between May 1 and June 16, pile driving operations shall not occur from both the NH side and VT side of the river at the same time unless there is at least 600 feet between the operations, and pile driving must take place during daylight hours.
4. Populations of rare plants will be shown on construction plans.
5. The Contractor will be required to construct the temporary trestle to avoid driving any piles within the mapped rare plant population, and the trestle finger needed at Pier 4 will be constructed on the west side of the pier to avoid the mapped rare plant population.
6. Floating turbidity curtains or other appropriate sediment control measures will be utilized to minimize turbidity in the river.

Species of Concern Correspondence

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo



NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Stephen Hoffmann
53 Regional Drive
Concord, NH 03301

From: Amy Lamb, NH Natural Heritage Bureau
Date: 2/8/2019 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB19-0171

Town: Hinsdale, NH

Location: South of NH Route 119 crossing over
the Connecticut River / Boat Launch off
Prospect Street

Description: Hinsdale-Brattleboro 12210C - Construction of new bridge over the Connecticut River to bypass existing NH Route 119 between Hinsdale, NH and Brattleboro, VT. Proposed project also includes improvements to an existing boat launch facility located approximately 5 miles south of the bridge location. (Previous Reviews: NHB09-1387, NHB17-3636, NHB18-1811)

cc: Kim Tuttle

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

Comments: Please note: records for two wildlife species were added to this updated letter, and two species have been removed. Shortnose Sturgeon and Bald Eagle (nesting locations) were added, and Dwarf Wedge Mussel and Cerulean Warbler were removed. Contact the NH Fish & Game Department for additional information. Additionally, the map of the bridge project area has been amended from the previous version (NHB17-3636) to include mapping for Houghton's umbrella sedge (approximate location only).

Plant species	State ¹	Federal	Notes
flat-stem pondweed (<i>Potamogeton zosteriformis</i>)	E	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and stormwater runoff, and significant changes in water level.
grass-leaved mud-plantain (<i>Heteranthera dubia</i>)	T	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and stormwater runoff, and significant changes in water level.
Houghton's umbrella sedge (<i>Cyperus houghtonii</i>)	E	--	Threats include destruction of natural habitat, fire suppression and/or succession, trampling by hikers, and off-road vehicles. However, since the plants require open habitat, some disturbances (e.g., logging, mowing, and even off-road vehicle use) could actually benefit populations. Site-specific evaluation of conditions will aid in the conservation of this species.
lesser clearweed (<i>Pilea fontana</i>)	E	--	Threats are primarily alterations to the plants' rich mesic forest or riparian forest habitat.
long-leaved pondweed (<i>Potamogeton nodosus</i>)	T	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo



NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

pygmy-weed (<i>Crassula aquatica</i>)	E	--	stormwater runoff, and significant changes in water level. This species occurs on streambanks, as an aquatic plant, and in estuarine/seashore areas. Potential threats include wetland degradation, water level changes, and water quality degradation.
Vasey's pondweed (<i>Potamogeton vaseyi</i>)	E	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and stormwater runoff, and significant changes in water level.

Vertebrate species

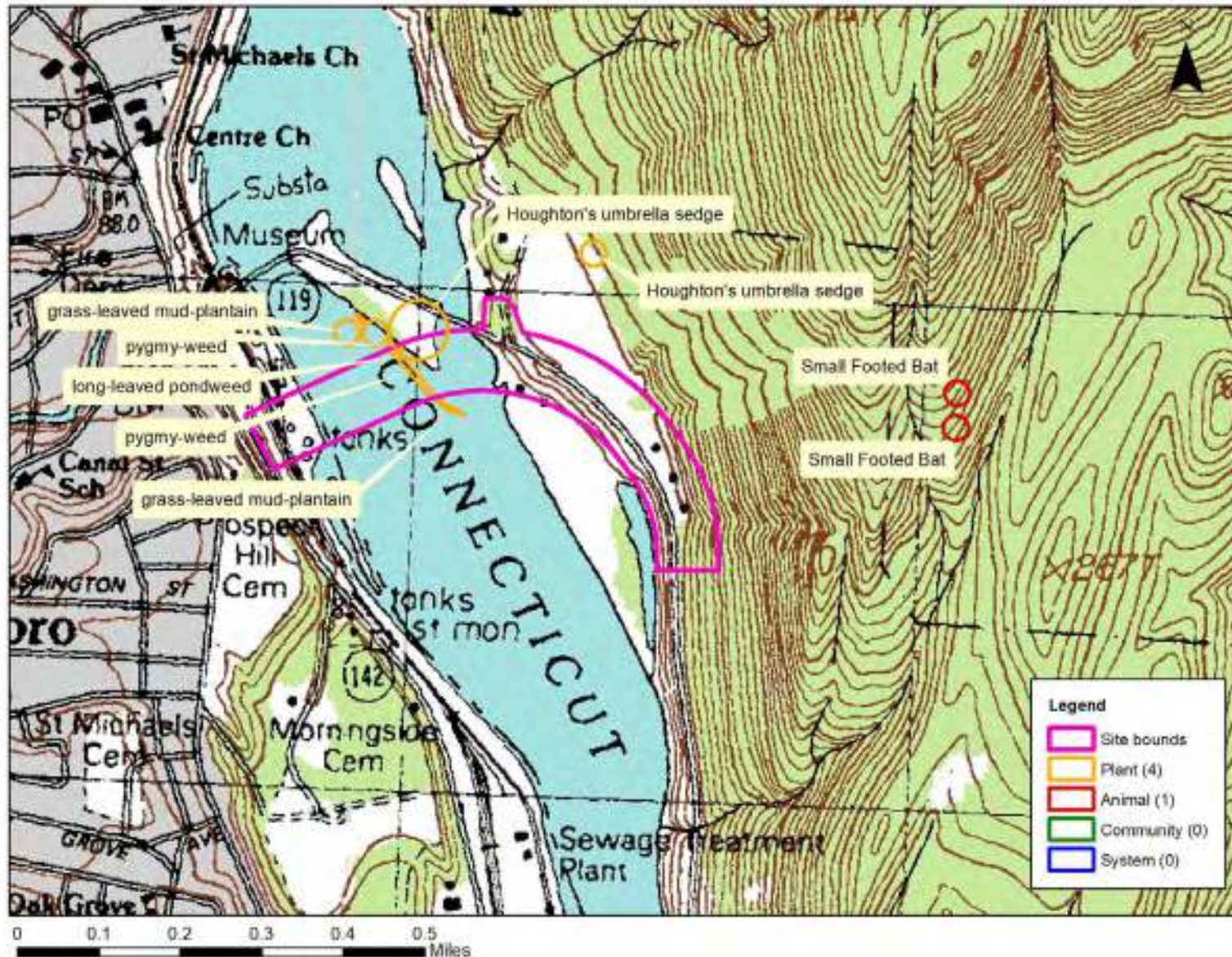
	State ¹	Federal	Notes
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Shortnose Sturgeon (<i>Acipenser brevirostrum</i>)	E	E	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).
Small Footed Bat (<i>Myotis leibii</i>)	E	--	Contact the NH Fish & Game Dept (see below).

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

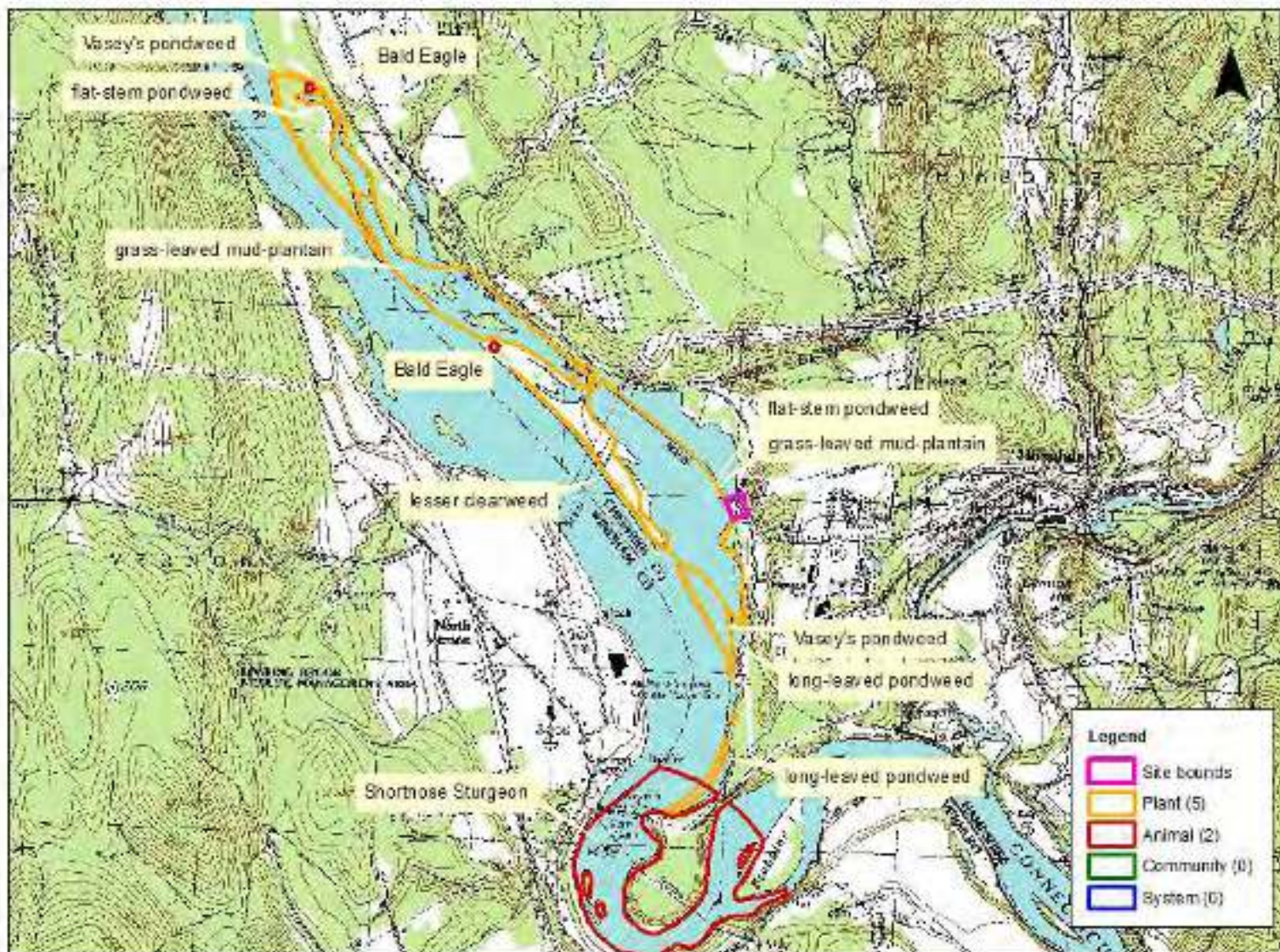
Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

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

NHB19-0171



NHB19-0171



New Hampshire Natural Heritage Bureau - Plant Record

flat-stem pondweed (*Potamogeton zosteriformis*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank:

Detailed Description: 2012: Tower Island and Liscomb Brook Mouth, upstream of: 200-300 clumps, scattered over a very large area. 2004: Tower Island: 100s to > 1,000 plants scattered throughout a backwater area. 1999: Access Road: Comprised 2% of total cover value in a 2 x 10 meter plot. 1971: Specimen collected.

General Area: 2012: **Aquatic bed** with associated plant species tape-grass (*Vallisneria americana*), Vasey's pondweed (*Potamogeton vaseyi*), long-leaved pondweed (*Potamogeton nodosus*), grass-leaved mud-plantain (*Heteranthera dubia*), wavy waternymph (*Najas flexilis*), and free-flowered waterweed (*Elodea nuttallii*), white water-lily (*Nymphaea odorata*), big-leaved pondweed (*Potamogeton amplifolius*), and clasping-leaved pondweed (*Potamogeton perfoliatus*). 2004: Dense aquatic vegetation. Native species and also *Myriophyllum spicatum* (Eurasian water milfoil), *Potamogeton crispus* (curled pondweed), *Najas minor* (brittle waternymph), and *Lythrum salicaria* (purple loosestrife). 1999: **Aquatic bed**. Associated species include *Ceratophyllum demersum* (submerged hornwort), *Vallisneria americana* (tape-grass), *Nymphaea* sp. (water-lily), *Elodea canadensis* (common waterweed), and *Myriophyllum* sp. (water-milfoil). 1971: River.

General Comments:

Management
Comments:

Location

Survey Site Name: Tower Island
Managed By:

County: Cheshire
Town(s): Hinsdale
Size: 141.6 acres

Elevation:

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

Directions: 2012: Use the Prospect Street boat launch and go through the train underpass. Upstream and around the island with the two large transmission line structures are scattered *P. zosteriformis*. Many individuals throughout the aquatic bed. 2004: Tower Island: Launch a boat at the Prospect St. boat launch in Hinsdale and go through an underpass under the old railroad tracks to the west of the launch. Scattered throughout the western side of the backwater area. 1999: Access Road: [From Hinsdale, take Rte. 119 west ca. 2 miles to access road on left, just after crossing under the powerline.]

Dates documented

First reported: 1971-07-25 Last reported: 2012-08-21

New Hampshire Natural Heritage Bureau - Plant Record

grass-leaved mud-plantain (*Heteranthera dubia*)**Legal Status**

Federal: Not listed
 State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
 State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).
 Comments on Rank:

Detailed Description: 2012: 7 patches observed in small area of deep water. 2007: Scattered plants and patches in good condition. No fruits/seeds observed.

General Area: 2012: Rooted in deep water, with associated species including long-leaved pondweed (*Potamogeton nodosus*), curly pondweed (*Potamogeton crispus*), wavy water nymph (*Najas flexilis*), common hornwort (*Ceratophyllum demersum*), and tape-grass (*Vallisneria americana*). 2007: Littoral zone, sandy bottom area of the CT River. Associated species include: *Elodea* spp. (waterweed), *Vallisneria americana* (tapegrass), and floating leaved *Sparganium* spp. (bur-reed). Invasive *Myriophyllum spicatum* (Eurasian water milfoil) and *Potamogeton crispus* (curled pondweed) also in the surrounding area.

General Comments:

Management Comments: 2012: The surrounding area is subject to boat traffic.

Location

Survey Site Name: Brattleboro, east of
 Managed By:

County: Cheshire
 Town(s): Hinsdale
 Size: .5 acres

Elevation:

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

Directions: 2007: Rte. 119 in Hinsdale to "unofficial" hand-carry launch at N 42.85116, W 72.55357. Go south to south shore of island in the littoral zone.

Dates documented

First reported: 2007-10-04 Last reported: 2012-08-28

New Hampshire Natural Heritage Bureau - Plant Record

Houghton's umbrella sedge (*Cyperus houghtonii*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Apparently secure but with cause for concern
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2015: Searched for but not found. [Island] 2014: 1-10 individuals observed, 40% in fruit. 2003: Searched for but not found. 2002: Searched for but not found. 1991: Searched for but not found. 1962: Specimen collected. 1929: Specimen collected. [Island?]

General Area: 2014: Confined to open graminoid-forb area at base of steep slope; did not extend into adjacent powerline. Associated plant species include panicked hawkweed (*Hieracium paniculatum*), Blue Ridge sedge (*Carex lucorum*), poison-ivy (*Toxicodendron radicans*), white goldenrod (*Solidago bicolor*), bristly sarsaparilla (*Aralia hispida*), lace lovegrass (*Eragrostis capillaris*), little bluestem (*Schizachyrium scoparium*), and staghorn sumac (*Rhus hirta*). 1962: Gravelly field, topsoil removed. 1929: Waste ground, fill, island.

General Comments: 2003: Most of island, roadside areas, and terrace (now boat storage) were investigated.
Management Comments: 2014: A ground fire swept through the site in the spring of 2013; the site is very disturbed otherwise, especially since the utility ROW is maintained.

Location

Survey Site Name: Mt. Wantastiquet, SW of
Managed By: Wantastiquet Mountain Natural Area

County: Cheshire
Town(s): Hinsdale
Size: .4 acres

Elevation:

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

Directions: 2015: Take the Route 119 bridge across the Connecticut River between Brattleboro, VT, and Hinsdale, NH. Park on the island in the middle of the river. There are several parking spaces close to the Vermont side. If possible, park in the lower parking area (toward the NH side of the river) and carry the canoe or kayak to the launching area on the southwest side of the island. Paddle around the island either way to get to the small island to the northeast of the island the bridge crosses. 2014: From downtown Brattleboro, take Main Street south to Route 119 turn off; proceed across bridge into NH and follow Route 119 approx. ½ mile to small shopping center on left; turn in and follow access road to very end at former WalMart parking lot. Population is near NE corner of building behind the small utility shed in the open field area. 1962: Terrace of Connecticut River near Brattleboro Bridge. 1929: Waste ground, fill, island.

Dates documented

First reported: 1929-07-11 Last reported: 2014-08-11

New Hampshire Natural Heritage Bureau - Plant Record

lesser clearweed (*Pilea fontana*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and landscape context ('A' on a scale of A-D).
Comments on Rank:

Detailed Description: 2012: More than 4,000 plants.

General Area: 2012: *Cattail marsh* dominated by narrow-leaved cattail (*Typha angustifolia*). Abundant associate species include small-spiked false nettle (*Boehmeria cylindrica*), spotted touch-me-not (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), and purple loosestrife (*Lythrum salicaria*). Other species include common arrowhead (*Sagittaria latifolia*), red-osier dogwood (*Swida sericea*), boneset thoroughwort (*Eupatorium perfoliatum*), multiflora rose (*Rosa multiflora*), and forget-me-not (*Myosotis* sp.).

General Comments:

Management

Comments:

Location

Survey Site Name: Tower Island

Managed By:

County: Cheshire

Town(s): Hinsdale

Size: 1.9 acres

Elevation:

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

Directions: 2012: From the Prospect Street boat launch off Rte. 119 in Hinsdale, paddle under RR bridge and out to main channel of the Connecticut River. The southern extent of the population occurs at the southern tip of the long peninsula of cattail marsh that extends north upriver. Plant are scattered near western edge of cattail marsh for 0.85 miles.

Dates documented

First reported: 2012-10-03

Last reported: 2012-10-03

New Hampshire Natural Heritage Bureau - Plant Record

long-leaved pondweed (*Potamogeton nodosus*)**Legal Status**

Federal: Not listed
 State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
 State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
 Comments on Rank:

Detailed Description: 2012: Area 2: 8 clumps with over 1000 stems, 75% in flower. 2007: Area 1: Scattered plants in patches in the general vicinity. Some leaf deterioration, no flowers or fruits observed.

General Area: 2012: Area 2: **Aquatic bed** with associated species curly pondweed (*Potamogeton crispus*), wavy waternymph (*Najas flexilis*), common hornwort (*Ceratophyllum demersum*), and water-milfoil (*Myriophyllum* sp.). 2007: Area 1: Connecticut River in sandy bottom, littoral zone. Associated species include: *Elodea* spp. (waterweeds), *Vallisneria americana* (tapegrass), floating leaved *Sparganium* spp. (bur-reeds). Invasive *Myriophyllum spicatum* (Eurasian water milfoil) and *Potamogeton crispus* (curled pondweed) also in the surrounding area.

General Comments:
 Management
 Comments:

Location

Survey Site Name: Brattleboro, east of
 Managed By:

County: Cheshire
 Town(s): Hinsdale
 Size: .9 acres

Elevation:

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

Directions: 2007: Area 1: Rte. 119 to "unofficial" hand-carry launch at N 42.85116, W 72.55357. Go just south along the shore of the island (in the littoral zone).

Dates documented

First reported: 2007-10-04 Last reported: 2012-08-16

New Hampshire Natural Heritage Bureau - Plant Record

pygmy-weed (*Crassula aquatica*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank:

Detailed Description: 2012: 2 clumps, 300 feet apart, with approximately 60 total stems between them. Both in fruit.

General Area: 2012: Plants growing on mud flat amidst broad-leaved cattails (*Typha latifolia*). Associated species include yellow-seeded false pimpernel (*Lindernia dubia* var. *dubia*), common water-primrose (*Ludwigia palustris*), spikesedge (*Eleocharis* sp.) and arrowhead (*Sagittaria* sp.).

General Comments:
Management
Comments:

Location

Survey Site Name: Brattleboro, east of
Managed By:

County: Cheshire
Town(s): Hinsdale
Size: .0 acres

Elevation:

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

Directions: 2012: From Brattleboro, VT go east on Rte. 119 to island in Connecticut River. Use pulloff to the south. Haphazard boatlaunch at N42.85116 W 72.55357. Population is along shore hiding in the cattails.

Dates documented

First reported: 2012-08-16 Last reported: 2012-08-16

New Hampshire Natural Heritage Bureau - Animal Record

Shortnose Sturgeon (*Acipenser brevirostrum*)**Legal Status**

Federal: Listed Endangered
State: Listed Endangered

Conservation Status

Global: Rare or uncommon
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2017: 1 individual detected, sex unknown.
General Area: 2017: Connecticut River below Vernon Dam.
General Comments:
Management
Comments:

Location

Survey Site Name: Vernon Dam
Managed By:

County: Cheshire
Town(s): Hinsdale
Size: 136.8 acres Elevation:

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

Directions: 2017: Connecticut River below Vernon Dam.

Dates documented

First reported: 2017-08-31 Last reported: 2017-08-31

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

New Hampshire Natural Heritage Bureau - Animal Record

Small Footed Bat (*Myotis leibii*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Apparently secure but with cause for concern
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2009: Observation 1: 1 adult postlactating female. Observation 2: 3 observed, 1 non-reproductive female captured.

General Area: 2009: Observations 1 & 2: Vertical crevices in rock.

General Comments:

Management

Comments:

Location

Survey Site Name: Mt. Wantastiquet

Managed By: Wantastiquet Mountain Natural Area

County: Cheshire

Town(s): Hinsdale

Size: .9 acres

Elevation:

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

Directions:

Dates documented

First reported: 2009-09-15

Last reported: 2009-09-15

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

Christine J. Perron

From: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Sent: Thursday, June 20, 2019 1:06 PM
To: Christine J. Perron
Cc: Henderson, Carol; Houghton, Sandra
Subject: RE: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River (NHB17-3636)

Christine,

I talked to Matt Carpenter, who covers our anadromous and catadromous fish species other than at the Seacoast. He agreed that shortnose sturgeon has not been documented above the Vernon Dam. We do not expect impacts to bald eagle as a result of the proposed work as activities will not occur with ¼ mile of nests.

Sandra Houghton will have to get back to you on the state endangered small footed bat and any timing restrictions on tree removal to protect pups. Voluntary conservation measures for your project would be to remove trees during the inactive season (December- March when they are hibernating) and maintain potential roost trees (snags, trees with crevices and/or loose bark).

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH 03301
603-271-6544

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Tuesday, June 18, 2019 7:49 AM
To: Tuttle, Kim
Cc: Henderson, Carol
Subject: RE: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River NHB17-3636

ATTENTION: This email has originated from outside of the organization. Do not open attachments or click on links unless you recognize the sender and know the content is safe.

Kim,

I contacted you about the subject project early last year. The project stalled for a while and I'm just getting back to preparing permit applications. We received an updated NHB review letter (attached) and it now includes records of nesting bald eagles about a mile upstream from proposed improvements to a boat launch, which is additional work that has been added to the bridge project. This additional work will involve improvements to an existing boat ramp, creating four parking spaces and a turnaround area, and realigning the existing rail trail. Some tree clearing will be necessary within areas of hardwood forest. Photos of the area are attached.

In addition to bald eagle, the updated NHB review also includes one record of shortnose sturgeon downstream of the Vernon Dam. I have contacted NOAA for input on this and have not heard back yet. The new bridge is about 6 miles upstream of the Vernon Dam and the boat launch is about 1 mile upstream of the dam. Based on what I've read on NOAA's website, there have been no documented sightings of sturgeon above the Vernon Dam.

Could you provide input on any concerns with bald eagle and shortnose sturgeon? I'm copying Carol on this email to keep her in the loop since this project may be discussed at one more Natural Resource Agency meeting before applications are submitted.

Thanks,
Christine

Christine Perron, CWS

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

From: Tuttle, Kim
Sent: Friday, January 19, 2018 1:43 PM
To: Christine J. Perron
Cc: Holman, Heidi ; Houghton, Sandra
Subject: FW: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River NHB17-3636

Christine,

We do not expect impacts to cerulean warbler as a result of the proposed NH Route 119 bridge construction over the Connecticut River in Hinsdale- Brattleboro. The documented cerulean breeding territory is located about two thirds the way up on Mt. Wantastiquet. Sandi Houghton can get back to you on the small footed bat.

Thanks,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
11 Hazen Drive
Concord, NH 03301
603-271-6544

From: Henderson, Carol
Sent: Friday, January 19, 2018 1:26 PM
To: Houghton, Sandra; Tuttle, Kim
Subject: FW: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River

Hi Kim/Sandy:

Would you have any additional comments about this project over the Ct. River. The DWM and NLEB seem to be handled but she would like information on the small footed bat and the cerulean warbler and this project. Thanks, Carol

From: Christine J. Perron [<mailto:CPerron@mjinc.com>]
Sent: Wednesday, January 17, 2018 1:32 PM
To: Henderson, Carol
Subject: FW: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River

Hi Carol,

I was planning to check in with you about this project at today's resource agency meeting, but am doing so via email instead since the meeting was canceled. Have you had a chance to talk about this project internally?

As I mention below, we are happy to meet in person if that's easier.
Thank you!
Christine

From: Christine J. Perron
Sent: Friday, December 22, 2017 10:22 AM
To: Carol Henderson <Carol.Henderson@wildlife.nh.gov>
Subject: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River

Hi Carol,

I wanted to touch base with you about the subject project, which we discussed at the November Natural Resource Agency Meeting.

The new bridge will carry NH Route 119 over the Connecticut River approximately 1,000' south of the two existing bridges that currently carry this route over the river. The new crossing will be an 8-span steel multi-girder bridge with an overall length of 1,782'. The bridge will have solid wall piers with concrete foundations built on piles. Five piers will be in the river, one pier will be on the island, and two piers will be on land on each side of the river. Tremie seal methodology will be used so that foundation and pier concrete can be poured in the dry within the cofferdams. Access for construction is anticipated to be from a trestle located on the upstream side of the proposed bridge, which extends from the NH bank to the last in-water pier near the VT bank. The trestle will be built on temporary piles.

Permit applications will be submitted summer 2018. The project is currently scheduled to advertise in September 2019, with construction beginning in 2020. The duration of construction may be up to 4 years.

In regard to fisheries, bald eagle, and other species of concern, we are looking for input on any potential concerns with construction timing in particular, since any time of year restrictions would impact the overall construction schedule.

There will be tree clearing in the southeast quadrant of the existing bridge, as well as on the island (scattered trees). This area is all hardwoods, primarily cottonwood, maple, and sycamore. There are no large "super canopy" pine trees.

The preliminary plan can be viewed here:
https://www.nh.gov/dot/projects/hinsdalebrattleboro12210/documents/12210c_pl_plan.pdf

A location map is attached, along with the NHB memo I just received. I was surprised to see cerulean warbler and small footed bat listed in the memo – this is the first time either of these species has come up in one of my NHB reviews.

As I mentioned at the November resource agency meeting, a dive survey for dwarf wedgemussels was completed in 1999, and a shoreline survey was completed in 2009. No dwarf wedgemussels were found during either survey. I will be confirming with USFWS that there are still no concerns with this species.

The project is expected to qualify under the Programmatic Consultation for northern long-eared bat, and an acoustic survey is not proposed.

Let me know if you need any additional information. If it's easier to meet at NHFG to discuss in person, we would be happy to do that also.

Thanks Carol, and Merry Christmas!

Christine

Christine Perron, CWS • Senior Environmental Analyst

McFarland Johnson

53 Regional Drive • Concord, NH 03301

OFFICE: 603-225-2978 ext. 128

www.mjinc.com

Christine J. Perron

From: Tuttle, Kim <Kim.Tuttle@wildlife.nh.gov>
Sent: Tuesday, June 25, 2019 1:05 PM
To: Christine J. Perron
Cc: Henderson, Carol
Subject: RE: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River NHB17-3636

Hello Christine,

These comments should wrap up our concerns over the protected species listed on NHB17-3636. I talked to Sandra about eagles and small footed bat. She doesn't expect impacts to eagle based on the current location of eagle nests. If we could keep mature tree clearing to a minimum, it will be helpful though as the eagles that nest along the Connecticut River in this area often nest in cottonwoods. Also, as for all our jobs in riparian wildlife corridors, please avoid the use of welded plastic or 'biodegradable plastic' netting or thread in erosion control matting, if needed. There are numerous documented cases of snakes, birds, and other wildlife being trapped and killed in erosion control matting with synthetic netting and thread. The use of erosion control berm, white Filtrexx Degradable Woven Silt Sock, or several 'wildlife friendly' options such as woven organic material (e.g. coco or jute matting such as North American Green SC150BN or equivalent) are readily available. Thanks, Kim Tuttle

Below are Sandra Houghton's comments relative to the state endangered eastern small footed bat:

From: Houghton, Sandra
Sent: Tuesday, June 25, 2019 12:03 PM
To: Tuttle, Kim
Subject: FW: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River

Hi Kim,

I had some conversations with Christine back in January. I'm not sure if there is suitable MYLE habitat in the project area. If there is suitable habitat it could be surveyed OR should they not be able to survey I recommend including a condition that if any bats are seen during the rock work that rock work would stop in the area and NHFG should be contacted for guidance.

Thank you,
Sandi

Sandra Houghton
Wildlife Diversity Biologist
Nongame and Endangered Wildlife Program
NH Fish and Game Department
11 Hazen Dr.
Concord, NH 03301
603-271-5679

From: Christine J. Perron [<mailto:CPerron@mjinc.com>]
Sent: Thursday, January 25, 2018 4:31 PM

To: Houghton, Sandra

Subject: RE: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River

Hi Sandi,

Thanks for the additional information. I don't recall seeing suitable habitat when I was at the site a few months ago, but I was focused on wetlands. I'll be going back out in the spring and will check for potential habitat.

Thanks again.

Christine

From: Christine J. Perron [mailto:CPerron@mjinc.com]

Sent: Tuesday, June 18, 2019 7:49 AM

To: Tuttle, Kim

Cc: Henderson, Carol

Subject: RE: Hinsdale-Brattleboro 12210C - New bridge over Connecticut River NHB17-3636

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Kim,

I contacted you about the subject project early last year. The project stalled for a while and I'm just getting back to preparing permit applications. We received an updated NHB review letter (attached) and it now includes records of nesting bald eagles about a mile upstream from proposed improvements to a boat launch, which is additional work that has been added to the bridge project. This additional work will involve improvements to an existing boat ramp, creating four parking spaces and a turnaround area, and realigning the existing rail trail. Some tree clearing will be necessary within areas of hardwood forest. Photos of the area are attached.

In addition to bald eagle, the updated NHB review also includes one record of shortnose sturgeon downstream of the Vernon Dam. I have contacted NOAA for input on this and have not heard back yet. The new bridge is about 6 miles upstream of the Vernon Dam and the boat launch is about 1 mile upstream of the dam. Based on what I've read on NOAA's website, there have been no documented sightings of sturgeon above the Vernon Dam.

Could you provide input on any concerns with bald eagle and shortnose sturgeon? I'm copying Carol on this email to keep her in the loop since this project may be discussed at one more Natural Resource Agency meeting before applications are submitted.

Thanks,
Christine

Christine Perron, CWS

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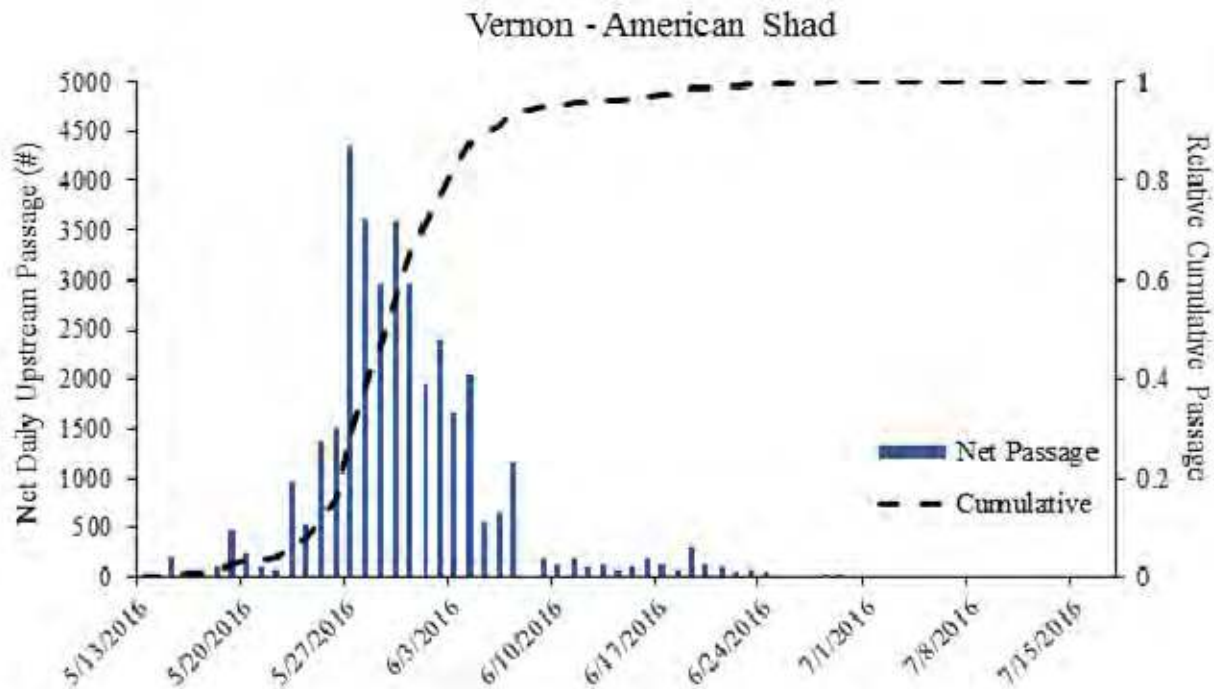
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Christine J. Perron

From: Will, Lael <Lael.Will@vermont.gov>
Sent: Monday, April 23, 2018 2:47 PM
To: Christine J. Perron
Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Christine,

Since the majority of the project is in NH waters, I will defer to them. I worked on a lot of pile driving projects in the SF Bay and the percussions can rupture the swim bladders of fish. There are other measures that could be implemented (bubble curtains), but they are expensive. I would say at the least if they notice fish floating (not just shad), that they stop work and implement additional protective measures. For shad, we monitor the run, so if it becomes a problem, I recommend waiting until they've passed. Below is the periodicity of the shad run in 2016.



Lael Will, Fisheries Biologist

[cell] 802-777-0827 [fax] 802-885-8890

[email] lael.will@vermont.gov

[website] www.vtfishandwildlife.com

Fish & Wildlife Department

100 Mineral Street, Suite 302

Springfield, VT 05156-3168

From: Christine J. Perron <CPerron@mjinc.com>

Sent: Tuesday, April 10, 2018 2:58 PM

To: Will, Lael <Lael.Will@vermont.gov>

Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Lael,

I wanted to touch base about the subject project. As I mentioned in my email to Jodi back in December, the project consists of the construction of a new 8-span bridge over the Connecticut River. This project was reviewed a number of years ago when the Environmental Assessment (EA) was completed in 2013 by Dubois & King. The project has now moved into final design and permitting for the selected alternative (see description in my email below), with NHDOT as the lead State agency. State and Federal permit applications will be prepared through this summer, with submittal expected by late summer.

The Vermont state line is approximately the low water mark on the west side of the river, so most of the bridge is in NH. There will be no permanent impacts on the VT side of the river (all new piers will be in NH), and only one small area (2,500 sq ft) of temporary impact for access to install drainage. The visualizations at the following link provide a good overview of the project's location:

https://www.nh.gov/dot/projects/hinsdalebrattleboro12210/documents/12210c_pl_slides_09132017.pdf

The project will include driving piles for the new bridge and for a temporary construction trestle. The NH Fish & Game Department was concerned with potential impacts to spawning shad from noise generated from pile driving. Using NOAA's acoustic calculator, I determined that the area impacted by underwater noise will extend approximately 300 feet from each pile as it's installed. The width of the main channel (to the west of the island) is approximately 800' and the width of the side channel (to the east of the island) is approximately 500'. This means that there will always be a large portion of the river that is not impacted by noise during pile driving where shad can take refuge. It is anticipated that the Contractor would likely drive piles across the river as the trestle is constructed. However, if the Contractor chooses to drive piles at more than one location at a time, more than 600 feet will need to be maintained between any pile driving activity so that there is always a safe zone of passage for fish that remains unimpacted by noise. Additionally, it has been documented that shad spawning takes place at night, and pile driving will take place during daylight hours only, which would reduce impacts to shad that may be spawning in the vicinity of the project.

With these measures in place from May 1 to June 16, NH Fish & Game has no concerns with the project.

I am contacting you to find out if you have any additional fisheries concerns.

Thanks for your time.

Christine

Christine Perron, CWS

Project Manager • Senior Environmental Analyst

McFarland Johnson

53 Regional Drive • Concord, NH 03301

OFFICE: 603-225-2978 ext. 128

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From: Shippee, Jodi [<mailto:Jodi.Shippee@vermont.gov>]

Sent: Monday, January 08, 2018 4:49 PM

To: Christine J. Perron <CPerron@mjinc.com>

Cc: Marshall, Everett <Everett.Marshall@vermont.gov>; Ferguson, Mark <Mark.Ferguson@vermont.gov>; Popp, Bob <Bob.Popp@vermont.gov>; Hammond, Forrest <Forrest.Hammond@vermont.gov>; Will, Lael <Lael.Will@vermont.gov>

Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Christine,

My apologies for the delay in my response. I have reviewed the Natural Heritage Database for the presence of rare and uncommon species and state-significant natural communities in the vicinity of the proposed bridge replacement between Brattleboro and Hinsdale. I looked slightly farther afield than your map, in case any known nearby species of interest might also be expected at the bridge site. The area of my review is shown in the attached.

Some of the species, particularly some of the slower-water plants and odonates, may not occur in the project area but I opted to include them to give you, and our taxon-specialists, the opportunity to consider them. Reports of all are attached; they can be matched to specific known locations in the Natural Resources Atlas by the EO ID or Source Feature ID. You can consult with our Botanist Bob Popp and Zoologist Mark Ferguson, both copied here, for specific recommendations on the rare and uncommon species.

You should also consult with Wildlife Biologist Forrest Hammond and Fisheries Biologist Lael Will, both copied here, for their review of wildlife and fisheries resources. In fact, for future projects you can route correspondence to our Wildlife and Fisheries Biologists alone. Wildlife Biologists will review for rare, threatened and endangered species and state-significant natural communities, as well as wildlife habitat and other Department interests. We hope that this streamlined approach to permitting reviews makes your life easier. Of course you are always welcome to contact Everett or I if you only need information from the Natural Heritage Database (e.g. a project not going through permitting). More information and contact information for other Districts can be found on our Department's [Development Review page](#).

Let me know if you have any questions on the information attached, or if I can be of further assistance.

Jodi

Jodi Shippee
Assistant Natural Heritage Information Manager
Vermont Fish & Wildlife Department
1 National Life Drive, Davis 2
Montpelier, VT 05620-3702
(802)272-2855

From: Christine J. Perron [<mailto:CPerron@mjinc.com>]
Sent: Thursday, December 28, 2017 10:15 AM
To: Marshall, Everett <Everett.Marshall@vermont.gov>
Cc: Shippee, Jodi <Jodi.Shippee@vermont.gov>
Subject: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Good morning Everett,

My firm, McFarland Johnson, has been hired by the NH Department of Transportation to coordinate the environmental review and permitting for the subject project. A new bridge will be constructed to carry NH Route 119 over the Connecticut River approximately 1,000' south of the two existing bridges that currently carry this route over the river. The new crossing will be an 8-span bridge with an overall length of 1,782'. Five piers will be in the river, one pier will be on the island, and two piers will be on land on each side of the river (see attached Proposed Alignment). Access for construction is anticipated to be from a trestle located on the upstream side of the proposed bridge, and will extend from the NH bank to the last in-water pier near the VT bank. The trestle will be built on temporary piles.

I looked up the project area on the Natural Resource Atlas and there are a few RTE occurrences in the area (see attached). I'm looking for any information you could provide on these records, as well as any potential concerns with the project.

Thanks for your time.
Christine

Christine J. Perron

From: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Sent: Thursday, November 07, 2019 11:59 AM
To: Christine J. Perron
Cc: Crickard, Ronald; Nichols, William
Subject: RE: Hinsdale-Brattleboro 12210C - rare plant survey

Hi Christine,

Thank you for sending the 2019 survey report. Based on the survey results on the CT River Island, and at the boat launch 5 mi to the south, no rare plant species were documented within impact areas at either location, and NHB does not expect impacts to the following species (see NHB19-0171):

lesser clearweed (*Pilea fontana*)
Houghton's umbrella sedge (*Cyperus houghtonii*)
pygmy-weed (*Crassula aquatica*)

Two aquatic species have also been documented in the Connecticut River in the vicinity of impact areas of the new bridge:

long-leaved pondweed (*Potamogeton nodosus*)
grass-leaved mud-plantain (*Heteranthera dubia*)

After receiving the first survey report in 2018, NHB requested additional information to be able to confirm the ID of *Potamogeton nodosus*. Since there are many species of *Potamogeton* in NH, which readily hybridize and are identified based on complex characters, State Botanist Bill Nichols requested the following:

“For *Potamogeton nodosus*, we would either need a diagnostic specimen to examine or to have the surveyor provide us with diagnostic characteristics, preferably providing observed specimen characteristics following each *Potamogeton* couplet choice in Haines.” (email dated 11/19/18)

Unfortunately, the information provided in the updated survey report was not sufficient to confirm the identity of this species; please see email from Bill Nichols below. However, since this species is known to occur at this location, coordination to avoid rare plant species has already occurred, and it is definitely possible that the species documented is in fact *Potamogeton nodosus*, NHB proposes that the project proceeds assuming a positive identification. I approve of the three items you included in the permit application to protect rare aquatic plant species:

1. Populations of rare plants will be shown on construction plans.
2. The Contractor will be required to construct the temporary trestle to avoid driving any piles within the mapped rare plant population, and the trestle finger needed at Pier 4 will be constructed on the west side of the pier to avoid the mapped rare plant population.
3. Floating turbidity curtains or other appropriate sediment control measures will be utilized to minimize turbidity in the river.

Provided that there will be no direct impacts to State Listed plant species, NHB would not request any follow-up monitoring; please contact me if field conditions are found to necessitate rare plant impacts during construction.

Thanks very much,
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2834

amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Nichols, William <William.Nichols@dncr.nh.gov>
Sent: Friday, November 01, 2019 10:42 AM
To: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Subject: RE: Hinsdale-Brattleboro 12210C - rare plant survey

Hi Amy,
After reviewing the two emails you sent and attachments, I can't confirm the ID for *Potamogeton nodosus*. At this point, for the proposed work being done in the area, wondering if it is best to just move forward assuming it is *P. nodosus*. For NHB data purposes, we would not use the information to update the record (not that big of a deal).
Best,
Bill

From: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Sent: Thursday, October 31, 2019 3:12 PM
To: Nichols, William <William.Nichols@dncr.nh.gov>
Subject: FW: Hinsdale-Brattleboro 12210C - rare plant survey

Hi Bill,

Attached is a 2019 plant survey for *Potamogeton nodosus* in Hinsdale on the CT River. Also included is the 2018 survey report for the same site (this report has "2018" in the title). The photos provided show measurements for floating and submerged leaves, but they do not show fruits or stipules. Please let me know if you can confirm the ID of the species.

Thank you,
Amy

Amy Lamb
Ecological Information Specialist
(603) 271-2834
amy.lamb@dncr.nh.gov

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301

From: Christine J. Perron <CPerron@mjinc.com>
Sent: Friday, October 04, 2019 11:15 AM
To: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Cc: Crickard, Ronald <Ronald.Crickard@dot.nh.gov>
Subject: Hinsdale-Brattleboro 12210C - rare plant survey

Hi Amy,

We completed a rare plant survey at the bridge site and boat launch at the end of July. Results of the survey are summarized in the attached.

We are finalizing the wetland permit application, which will be submitted to DES later this month. The following language regarding rare plants is currently in the application materials:

1. Populations of rare plants will be shown on construction plans.
2. The Contractor will be required to construct the temporary trestle to avoid driving any piles within the mapped rare plant population, and the trestle finger needed at Pier 4 will be constructed on the west side of the pier to avoid the mapped rare plant population.
3. Floating turbidity curtains or other appropriate sediment control measures will be utilized to minimize turbidity in the river.

Plan sheets from the draft wetland impact plans are attached. Sheet 7 shows the locations of rare plants within the work area and shows the trestle finger at Pier 4 located on the west side of the pier.

Let us know if you need any additional information or have any concerns.

Thanks,
Christine

Christine Perron, CWS

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

Christine J. Perron

From: Popp, Bob <Bob.Popp@vermont.gov>
Sent: Thursday, November 15, 2018 2:28 PM
To: Christine J. Perron
Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Christine, thank you for forwarding the report. I have no further concerns about rare, threatened or endangered plants on the VT side.

Bob

Bob Popp
Department Botanist
VT. Dept of Fish & Wildlife
5 Perry St. Suite 40
Barre, VT. 05641

(802) 476-0127
bob.popp@vermont.gov

From: Christine J. Perron <CPerron@mjinc.com>
Sent: Tuesday, November 13, 2018 2:26 PM
To: Popp, Bob <Bob.Popp@vermont.gov>
Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Hi Bob,

A summary of rare plant surveys completed over the summer is attached. We did not identify any VT-listed plants in the project area.

Please get in touch if you have any further questions or concerns.

Thanks,
Christine

Christine Perron, CWS
Project Manager • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128
www.mjinc.com

From: Popp, Bob <Bob.Popp@vermont.gov>
Sent: Wednesday, January 17, 2018 8:58 AM
To: Christine J. Perron <CPerron@mjinc.com>
Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Hi Christine, thank you for checking with us. The project will require another Rare, Threatened, and Endangered plant survey since the previous one was done ca. 8+ years ago. We typically accept inventories for 3 years so you are well beyond that date. The window for such inventories begins June 15th and extends thru 30 Sept. I note that you plan to submit permit applications in early Sept. The inventory time frame should not interfere with that schedule. I suggest

you proceed as planned referencing both the previous inventory and the impending one in the application. If a plant of concern were observed in the impact area, we would work with you to mitigate that impact.

We request the more recent inventory because of the potential for rare plants to colonize cobbly and/or sandy rivershores. I also request that your inventory include rare aquatic plants which are known from the Connecticut river just downstream of the bridge. This would entail inventorying only in the area of rooted aquatics, typically limited to 2 to 3 feet depth.

Let me know if you need further information.

Bob

Bob Popp
Department Botanist
VT. Dept of Fish & Wildlife
5 Perry St. Suite 40
Barre, VT. 05641

(802) 476-0127
bob.popp@vermont.gov

From: Christine J. Perron [<mailto:CPerron@mjinc.com>]
Sent: Tuesday, January 09, 2018 8:25 AM
To: Popp, Bob <Bob.Popp@vermont.gov>
Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Good morning Bob,

I wanted to follow up with you in response to the information that Jodi sent yesterday. You may recall that this bridge project was reviewed a number of years ago when the Environmental Assessment (EA) was completed in 2013 by Dubois & King. The EA states that a survey was completed in 2009 for 4 plant species of concern in Vermont: lace love-grass, wild sensitive plant, slender muhly, and mountain laurel. None of these plants were found within or adjacent to the project area at that time.

The project has now moved into final design and permitting for the selected alternative (see description in my email below), with NHDOT as the lead.

The visualizations at the following link provide a good overview of the project's location:

https://www.nh.gov/dot/projects/hinsdalebrattleboro12210/documents/12210c_pl_slides_09132017.pdf

State and Federal permit applications will be prepared through this spring, with submittal expected by early summer.

Do you need any additional information to review the project for potential concerns with sensitive plant species?

Thanks for your time.
Christine

Christine Perron, CWS
Project Manager • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128

From: Shippee, Jodi [<mailto:Jodi.Shippee@vermont.gov>]
Sent: Monday, January 08, 2018 4:49 PM
To: Christine J. Perron <CPerron@mjinc.com>
Cc: Marshall, Everett <Everett.Marshall@vermont.gov>; Ferguson, Mark <Mark.Ferguson@vermont.gov>; Popp, Bob <Bob.Popp@vermont.gov>; Hammond, Forrest <Forrest.Hammond@vermont.gov>; Will, Lael <Lael.Will@vermont.gov>
Subject: RE: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Christine,

My apologies for the delay in my response. I have reviewed the Natural Heritage Database for the presence of rare and uncommon species and state-significant natural communities in the vicinity of the proposed bridge replacement between Brattleboro and Hinsdale. I looked slightly farther afield than your map, in case any known nearby species of interest might also be expected at the bridge site. The area of my review is shown in the attached.

Some of the species, particularly some of the slower-water plants and odonates, may not occur in the project area but I opted to include them to give you, and our taxon-specialists, the opportunity to consider them. Reports of all are attached; they can be matched to specific known locations in the Natural Resources Atlas by the EO ID or Source Feature ID. You can consult with our Botanist Bob Popp and Zoologist Mark Ferguson, both copied here, for specific recommendations on the rare and uncommon species.

You should also consult with Wildlife Biologist Forrest Hammond and Fisheries Biologist Lael Will, both copied here, for their review of wildlife and fisheries resources. In fact, for future projects you can route correspondence to our Wildlife and Fisheries Biologists alone. Wildlife Biologists will review for rare, threatened and endangered species and state-significant natural communities, as well as wildlife habitat and other Department interests. We hope that this streamlined approach to permitting reviews makes your life easier. Of course you are always welcome to contact Everett or I if you only need information from the Natural Heritage Database (e.g. a project not going through permitting). More information and contact information for other Districts can be found on our Department's [Development Review page](#).

Let me know if you have any questions on the information attached, or if I can be of further assistance.

Jodi

Jodi Shippee
Assistant Natural Heritage Information Manager
Vermont Fish & Wildlife Department
1 National Life Drive, Davis 2
Montpelier, VT 05620-3702
(802)272-2855

From: Christine J. Perron [<mailto:CPerron@mjinc.com>]
Sent: Thursday, December 28, 2017 10:15 AM
To: Marshall, Everett <Everett.Marshall@vermont.gov>
Cc: Shippee, Jodi <Jodi.Shippee@vermont.gov>
Subject: NHDOT Bridge project - Hinsdale, NH - Brattleboro, VT 12210C

Good morning Everett,

My firm, McFarland Johnson, has been hired by the NH Department of Transportation to coordinate the environmental review and permitting for the subject project. A new bridge will be constructed to carry NH Route 119 over the

Connecticut River approximately 1,000' south of the two existing bridges that currently carry this route over the river. The new crossing will be an 8-span bridge with an overall length of 1,782'. Five piers will be in the river, one pier will be on the island, and two piers will be on land on each side of the river (see attached Proposed Alignment). Access for construction is anticipated to be from a trestle located on the upstream side of the proposed bridge, and will extend from the NH bank to the last in-water pier near the VT bank. The trestle will be built on temporary piles.

I looked up the project area on the Natural Resource Atlas and there are a few RTE occurrences in the area (see attached). I'm looking for any information you could provide on these records, as well as any potential concerns with the project.

Thanks for your time.

Christine

Christine Perron, CWS

Project Manager • Senior Environmental Analyst

McFarland Johnson

53 Regional Drive • Concord, NH 03301

OFFICE: 603-225-2978 ext. 128

www.mjinc.com



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 23, 2018

Consultation Code: 05E1NE00-2018-SLI-0479

Event Code: 05E1NE00-2019-E-00343

Project Name: Hinsdale-Brattleboro 12210C

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

Attachment(s):

- Official Species List
-

Official Species List

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

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

Concord, NH 03301-5094

(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2018-SLI-0479

Event Code: 05E1NE00-2019-E-00343

Project Name: Hinsdale-Brattleboro 12210C

Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: Construction of new bridge to bypass two existing bridges that carry NH Route 119 over the Connecticut River between Hinsdale, NH and Brattleboro, VT.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/42.84931266889704N72.55289537827571W>



Counties: Cheshire, NH | Windham, VT

Endangered Species Act Species

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

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

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

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

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

Mammals

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

Critical habitats

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

Christine J. Perron

From: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Sent: Friday, November 30, 2018 8:45 AM
To: Christine J. Perron
Subject: Re: [EXTERNAL] RE: NHDOT Project - Hinsdale-Brattleboro 12210C

Good morning,

No, no DWM reported from that area, no species present.

Thanks for checking!

Susi

Susi von Oettingen
Endangered Species Biologist
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(W) 603-227-6418
(Fax) 603-223-0104

www.fws.gov/newengland

On Thu, Nov 29, 2018 at 9:02 AM Christine J. Perron <CPerron@mjinc.com> wrote:

Good morning Susi,

The subject project now includes improvements to an existing boat launch located about 5 miles downstream of the bridge site and 1.2 miles upstream of the Vernon Dam: 42.787203, -72.505704.

Any DWM concerns in this stretch of the river?

Thanks,
Christine

Christine Perron, CWS

Project Manager • Senior Environmental Analyst

McFarland Johnson

53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128

www.mjinc.com

From: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Sent: Tuesday, January 09, 2018 10:49 AM
To: Christine J. Perron <CPerron@mjinc.com>
Subject: Re: NHDOT Project - Hinsdale-Brattleboro 12210C

Hi Christine,

I'm writing to confirm, no DWM survey needed. This is outside the known extent of the population on the Connecticut River.

Susi

Susi von Oettingen

Endangered Species Biologist

New England Field Office

70 Commercial Street, Suite 300

Concord, NH 03301

(W) 603-227-6418

(Fax) 603-223-0104

www.fws.gov/newengland

On Tue, Jan 2, 2018 at 9:50 AM, vonOettingen, Susi <susi_vonoettingen@fws.gov> wrote:

Hi Christine,

Thanks for the update. I will have to check some recent surveys done for the Connecticut River. I'm pretty sure DWM have still not been found in that stretch of the river, but since I just returned from leave, it may take me a few days to review the report.

Susi

Susi von Oettingen

Endangered Species Biologist

New England Field Office

70 Commercial Street, Suite 300

Concord, NH 03301

(W) 603-227-6418

(Fax) 603-223-0104

www.fws.gov/newengland

On Thu, Dec 28, 2017 at 10:41 AM, Christine J. Perron <CPerron@mjinc.com> wrote:

Good morning Susi,

I am working on permitting for the subject project. A new bridge will be constructed to carry NH Route 119 over the Connecticut River approximately 1,000' south of the two existing bridges that currently carry this route over the river. The new crossing will be an 8-span bridge with an overall length of 1,782'. Five piers will be in the river, one pier will be on the island, and two piers will be on land on each side of the river. Access for construction is anticipated to be from a trestle located on the upstream side of the proposed bridge, and will extend from the NH bank to the last in-water pier near the VT bank.

You reviewed this project back in 2005 and 2009 when an Environmental Assessment was completed by Dubois & King. A dive survey for dwarf wedgemussels was completed in 1999, and a shoreline survey was completed in 2009. No dwarf wedgemussels were found during either survey. At that time, you did not have any concerns regarding DWM. I'm attaching the correspondence that was included in the EA.

Now that NHDOT is moving forward with the proposed alignment, I wanted to touch base with you to confirm that there are still no concerns with DWM in this section of the river.

Thanks Susi. Happy New Year!
Christine

Christine Perron, CWS

Project Manager • Senior Environmental Analyst

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United States Department of the Interior



FISH AND WILDLIFE SERVICE

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December 12, 2018

Ronald Crickard
Bureau of Environment
NH Department of Transportation
7 Hazen Drive, P.O. Box 483
Concord, New Hampshire 03302-0483

Re: NH DOT A004(152), 12210C Hinsdale, NH-Brattleboro, VT
TAILS: 05E1NE00-2018-F-0479

Dear Mr. Crickard:

The U.S. Fish and Wildlife Service (Service) is responding to your request, dated November 19, 2018, to verify that the New Hampshire Department of Transportation's (NH DOT) proposed new bridge construction project connecting Hinsdale, New Hampshire to Brattleboro, Vermont (Project) may rely on the December 15, 2016, Programmatic Biological Opinion (BO) for federally funded or approved transportation projects that may affect the northern long-eared bat (*Myotis septentrionalis*) (NLEB). We received your request and the associated LAA Consistency Letter on November 26, 2018. This letter provides the Service's response as to whether the Federal Highway Administration may rely on the BO to comply with section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; U.S.C. 1531 *et seq.*) for the Project's effects to the NLEB.

The NH DOT, as the non-Federal agency representative for the Federal Transportation Agency, has determined that the Project may affect, and is likely to adversely affect the NLEB. The Project includes the construction of a new bridge carrying NH Route 119 over the Connecticut River and demolition of two buildings. Less than 1 acre of tree clearing will occur, which may be implemented during the bat active season.

NH DOT also determined the Project may rely on the programmatic BO to comply with section 7(a)(2) of the ESA, because the Project meets the conditions outlined in the BO and all tree clearing related to the proposed work will occur farther than 0.25 mile from documented roosts and farther than 0.5 mile from any known hibernacula. The Service reviewed the LAA Consistency Letter and concurs with NH DOT's determination. This concurrence concludes your ESA section 7 responsibilities relative to this species for this Project, subject to the Reinitiation Notice below.

Conclusion

The Service has reviewed the effects of the proposed Project, which include the NHDOT's commitment to implement the impact avoidance, minimization, and compensation measures as indicated on the LAA Consistency Letter. We confirm that the proposed Project's effects are consistent with those analyzed in the BO. The Service has determined that the Project is consistent with the BO's conservation measures, and the scope of the program analyzed in the BO is not likely to jeopardize the continued existence of the NLEB. In coordination with your agency, the Federal Highway Administration, and the other sponsoring Federal Transportation Agencies, the Service will reevaluate this conclusion annually in light of any new pertinent information under the adaptive management provisions of the BO.

Incidental Take of the Northern Long-eared Bat

The Service anticipates that tree removal associated with the proposed Project will cause incidental take of the NLEB. However, the Project is consistent with the BO, and such projects will not cause take of NLEBs that is prohibited under the final 4(d) rule for this species (50 CFR §17.40(o)). Therefore, this taking does not require exemption from the Service.

Reporting Dead or Injured Bats

The NHDOT, the Federal Highway Administration, its State/local cooperators, and any contractors must take care when handling dead or injured NLEBs that are found at the project site, in order to preserve biological material in the best possible condition and to protect the handler from exposure to diseases, such as rabies. Project personnel are responsible for ensuring that any evidence about determining the cause of death or injury is not unnecessarily disturbed. Reporting the discovery of dead or injured listed species is required in all cases to enable the Service to determine whether the level of incidental take exempted by this BO is exceeded, and to ensure that the terms and conditions are appropriate and effective. Parties finding a dead, injured, or sick specimen of any endangered or threatened species must promptly notify the Service's New England Field Office.

Reinitiation Notice

This letter concludes consultation for the proposed Project, which qualifies for inclusion in the BO issued to the Federal Transportation Agencies. To maintain this inclusion, a reinitiation of this project-level consultation is required where the Federal Highway Administration's discretionary involvement or control over the Project has been retained (or is authorized by law) and if:

1. new information reveals that the Project may affect listed species or critical habitat in a manner or to an extent not considered in the BO;
2. the Project is subsequently modified in a manner that causes an effect to listed species or designated critical habitat not considered in the BO; or
3. a new species is listed or critical habitat designated that the Project may affect.

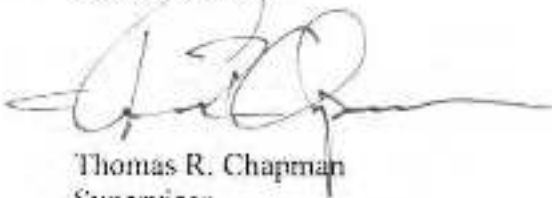
Ronald Crickard
December 12, 2018

3

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending reinitiation.

We appreciate your continued efforts to ensure that this Project is fully consistent with all applicable provisions of the BO. If you have any questions regarding our response, or if you need additional information, please contact Susi von Oettingen of this office at 603-227-6418.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'T. Chapman', with a long horizontal flourish extending to the right.

Thomas R. Chapman
Supervisor
New England Field Office

Christine J. Perron

From: Edith Carson-Supino - NOAA Federal <edith.carson-supino@noaa.gov>
Sent: Tuesday, June 18, 2019 9:15 AM
To: Christine J. Perron
Subject: Re: NHDOT Bridge Project - Hinsdale-Brattleboro 12210C - Shortnose sturgeon

Hi Christine,

Because none of the sightings upstream of the Vernon Dam have been verified, I don't think consultation would be necessary. If however, sturgeon are sighted during the project, please contact us so we can initiate consultation.

Thank you,

Edith

Edith Carson-Supino, M.Sc.
Section 7 Fish Biologist
NOAA Fisheries
U.S. Department of Commerce
Greater Atlantic Regional Fisheries Office
Phone: 978-282-8490
edith.carson-supino@noaa.gov

For ESA Section 7 guidance please see:

<https://www.greateratlantic.fisheries.noaa.gov/section7>



On Tue, Jun 18, 2019 at 7:22 AM Christine J. Perron <CPerron@mjinc.com> wrote:

Good morning Edith,

I'm writing to you about another project that I'm working on – this one is on the Connecticut River between Hinsdale, NH and Brattleboro, VT. We received the attached database review from the NH Natural Heritage Bureau and it includes a record of shortnose sturgeon. When I started researching this, I came across a page on the NOAA website that included you as a contact.

https://www.greateratlantic.fisheries.noaa.gov/stories/2017/10/24_surprise_catch_first_shortnose_sturgeon_documented_above_dam_in_connecticut_river.html

The project consists of the construction of a new bridge to carry NH Route 119 over the Connecticut River, bypassing the two existing bridges. The new bridge will be approximately 1,800 feet in length and will be located just downstream of the existing bridges. The site is about 6 miles upstream of the Vernon Dam. The project also includes improvements to a boat launch located about 5 miles downstream of the bridge site and 1 mile upstream of the Vernon Dam. The Federal Highway Administration is the lead federal agency.

I am in the process of preparing permit applications for this project and I'm hoping to get some guidance from you on shortnose sturgeon. Since the project is entirely upstream of the Vernon Dam, is there any need for consultation on this species?

Thanks for your time.

Christine

Christine Perron, CWS

Project Manager • Senior Environmental Analyst

McFarland Johnson

53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 1280

www.mjinc.com

Christine J. Perron

From: Mike R Johnson - NOAA Federal <mike.r.johnson@noaa.gov>
Sent: Friday, January 12, 2018 10:36 AM
To: Christine J. Perron
Subject: Re: NHDOT Project - Hinsdale-Brattleboro - Route 119 over the Connecticut River

Christine,

There has been no change- at this time we are not consulting on projects the CT River in NH and VT.

Mike

On Thu, Jan 11, 2018 at 1:35 PM, Christine J. Perron <CPerron@mjinc.com> wrote:

Mike,

I am working on permitting for the subject project. A new bridge will be constructed to carry NH Route 119 over the Connecticut River approximately 1,000' south of the two existing bridges that currently carry this route over the river. The new crossing will be an 8-span bridge with an overall length of 1,782'. Five piers will be in the river, one pier will be on the island, and two piers will be on land on each side of the river. Access for construction is anticipated to be from a trestle located on the upstream side of the proposed bridge, and will extend from the NH bank to the last in-water pier near the VT bank.

You reviewed this project back in 2001 and 2005 when an EFH Assessment was completed by Dubois & King prior to completion of the Environmental Assessment. Given this previous assessment, and the fact that NMFS has suspended EFH consultation for projects on the Connecticut River , I just wanted to confirm with you that no further coordination is required on EFH.

Thanks,

Christine

Christine Perron, CWS

Project Manager • Senior Environmental Analyst

McFarland Johnson

[53 Regional Drive](#) • [Concord, NH 03301](#)
[OFFICE: 603-225-2978 ext. 128](#)

www.mjinc.com

Christine J. Perron

From: Large, Sarah <Sarah.Large@dot.nh.gov>
Sent: Friday, November 17, 2017 7:19 AM
To: Lyford, Donald; Crickard, Ronald; Saffian, Bill; Christine J. Perron
Subject: FW: November 2017 NHDOT Natural Resource Agency Coordination Meeting
AGENDA
Attachments: STA_NV-626_ConnecticutRiver_2005.pdf

Good morning,

The Coast Guard reviewed the agenda for this month's Natural Resource Agency Meetings and emailed me comments / input from their review of the projects.

Please see Chris' email below about the Connecticut River and the Coast Guard's decision back in 2005. Attached is a document he sent along.

Best wishes,

Sarah Large

-----Original Message-----

From: Bisignano, Christopher J CIV [mailto:Christopher.J.Bisignano@uscg.mil]
Sent: Thursday, November 16, 2017 12:56 PM
To: Large, Sarah
Cc: Landry, Robert; Rousseau, James L CIV
Subject: RE: November 2017 NHDOT Natural Resource Agency Coordination Meeting **AGENDA**

Sarah,

Connecticut River-Route 119 project: D1(dpb) made a decision on the Route 119 project over the Connecticut River in 2005. CG does not believe waterway usage has changed significantly to change this decision; however, the stipulations in the attached still apply.

Warren Brook: NH Route 123A: We have this waterway listed as non-navigable so no USCG jurisdiction.

My apologies for delay in response.

Best regards,
Chris

Chris Bisignano
Supervisory Bridge Management Specialist First Coast Guard District (dpb) Battery Bldg, Room 301
1 South Street
New York, NY 10004-1466
Ph: (212) 514-4331
christopher.j.bisignano@uscg.mil

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U.S. Department of
Homeland Security

United States
Coast Guard



Commander
First Coast Guard District

One South Street
Battery Park Building
New York, NY 10004-1466
Staff Symbol: obr
Phone: (212) 668-7165
Fax: (212) 668-7967

16211/NV-626
CONNECTICUT RIV/NH

January 26, 2005

Mr. William F. O'Donnell
Environmental Programs Manager
FHWA, NH Division
19 Chenell Drive, Suite One
Concord, NH 03301-8539

Re: Route 119 Bridge over Connecticut River

Dear Mr. O'Donnell:

This is in response to your letter dated 18 January 2005 invoking 23 U.S.C. Section 144 (h) for the referenced bridge project. Based upon information you have provided, we concur with your determination.

Although this project will not require a bridge permit other areas of Coast Guard jurisdiction apply. The following stipulations must be met:

- a. Upon completion of design and finalization of the location and plans, New Hampshire Department of Transportation should coordinate with the First Coast Guard District bridge staff regarding approval of lights and other signals that may be required under 33 CFR 118. Approval of said lighting or waiver of same shall be obtained prior to construction.
- b. Any spillage of oil or oil based products during construction must be promptly reported to the Coast Guard by calling 1-800-424-8802.

If you have any further questions feel free to contact this office at the number above.

Sincerely,

A handwritten signature in black ink that reads "Gary Kassof".

Gary Kassof
Bridge Program Manager
First Coast Guard District
By direction of the District Commander

Copy:

- 1) FHWA, VT
- 2) VAOT
- 3) NHDOT

Section 106 Effect memo



State of Vermont
Agency of Transportation
National Life Building
Drawer 33
Montpelier, VT
05633-5001

VTrans Working to Get You There

September 5, 2000

Letter of Effect

Brattleboro VT - Hinsdale NH BRF 2000(19)SC

RECEIVED

SEP 20 2000

STRUCTURES
DIVISION

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 Vermont Agency of Transportation has reviewed this undertaking according to the standards set forth in 36 C.F.R., regulations established by the Advisory Council on Historic Preservation to implement Section 106. Project review consists of identifying the project's potential impacts to historic buildings, structures, historic districts, historic landscapes, and settings, and to known or potential archeological resources.

By agreement among VTrans, VT SHPO, VT-FHWA, NH DOT, NH SHPO, and NH-FHWA, the Section 106 review of this project for both states will be combined and completed by VTrans Historic Preservation Coordinator. Additionally, and as required by the Section 106 and 4(f) regulations, the historic bridge rehabilitation and construction of the bypass bridge are being reviewed together as a single undertaking.

Project Background / Public Involvement

The purpose of this project is to provide a safe, functionally efficient and cost-effective transportation corridor over the Connecticut River in the vicinity of downtown Brattleboro, Vermont, and Hinsdale, New Hampshire. Two bridges connecting to a mid-river island accomplish the existing crossing of the river in this location. Structural concerns with these bridges, functional highway deficiencies and traffic congestion near the Vermont touchdown area have resulted in a comprehensive effort to find a solution to these problems. To that end, the Brattleboro/Hinsdale Bridge Committee was organized by the Windham Regional Commission in February 1996. The bridge committee met a total of 16 times between February 15, 1996 and July 6, 1988. Technical assistance to that committee was provided by a Working Group that included: Windham regional Planning Commission (WRC), Vermont Agency of Transportation (VTrans), New Hampshire Department of Transportation (NH DOT), Dubois & King Inc., Clough, Harbor & Associates, and various other organizations. All Bridge Committee meetings were open to the public and two informational meetings were conducted by the committee. The bridge Committee was substantially involved in developing the project's purpose and need, identifying area resources, providing public informational forums, developing, refining, and recommending a preferred project alternative. In addition, Windham Regional Commission published four public informational newsletters during the project study that were sent to over 300 citizens and organizations. The newsletters are attached

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in the scoping report as Appendix F. Please refer to pages 10 - 13 of the Scoping Report for a fully detailed description of public involvement.

Ten alternatives were studied by the Bridge Committee. The analysis of these options begins on page 49 of the attached Scoping Report conducted by Dubois & King. In April of 1998, the Bridge Committee made public its project findings and recommendations, which are set forth fully on page 86 in Appendix F of the Scoping Report. The Bridge Committee strongly urged that Alternative F (Blue Seal) be identified as the preferred alternative. By letter dated July 7, 1998, the Town of Brattleboro Selectboard unanimously voted to accept and support the Bridge Committee's recommendation as the preferred alternative. By letter dated May 15, 1998, the Town of Hinsdale unanimously voted to accept and support the Bridge Committee's recommendation as the preferred alternative. Please see the "Project Description" for a detailed description of Alternative F.

Existing Conditions

Conditions of the existing roadway approaches and the spans themselves were investigated by NH DOT engineers. It was reported that both bridges have seriously deteriorated over the years. The concrete in the abutments, piers and backwalls is spalled and eroded, and reinforcing steel is exposed. Structural repairs completed in 1988 have a limited life expectancy. The main channel deck is exhibiting some corrosion and section loss and is leaking at the joints. The truss bottom chords are corroded, the superstructure paint is peeling, and the concrete bridge seats are cracked and spalled. An underwater inspection (1989) revealed scour in the form up to 10 feet of sheetpiling exposed at the west abutment and a 2 - 4 foot deep scour hole occurring at the west abutment. The side channel bridge is in similar condition to the main bridge with corrosion and leaking at the deck joints. The truss bottom chords are exhibiting corrosion and there is evident section loss on the lateral bracing and gusset points at the panel points. The superstructure paint has failed in areas and there is corrosion section loss occurring at the rivets. In addition, the concrete bridge seats have minor cracking and spalling. An underwater inspection (1995) found moderate to serious scouring at both piers and grout bags that were placed around the south pier in 1988 are visible beneath the timber cribbing and the footing is exposed up to 6 feet high. In addition, severe scaling was observed on the pier columns.

Project Description

Alternative "F", or "Blue Seal" alternative is the proposed alignment for the new bypass bridge crossing based on the bridge committee's findings and comprehensive public input. Alternative F will bypass both spans of the historic bridge with a single span bridge and provide for a grade-separated railroad crossing at a new location. The existing historic bridge will remain open during construction. Construction will begin on Route 142 in Brattleboro approximately 300 m south of the main street intersection. The project would end approximately 140 m east of the Wal Mart access in Hinsdale on Route 119. Please refer to attached maps for proposed alignment.

The proposed Vermont-side landing area for the new bridge is located approximately one-quarter mile south of the existing bridge. The new span would touchdown west of the RR tracks, and will be 26 feet higher than the existing bridge deck at the VT shore. A new

intersection will be created where Route 119 and Route 142 (Vernon Street) meet. This alignment will necessitate the removal of several storage tanks, the removal of two buildings (Nos. 1 and 2 on attached map - see 10/17/99 comments by Gurley) and a storage shed, and the partially burying of a segment of a large stone retaining wall along Route 142. No historic buildings will be taken nor adversely affected (see VTrans Gurley comments and VT SHPO concurrence - 10/17/99).

The proposed New Hampshire-side landing for the new bridge is located approximately 100 m east of the Wal Mart access (see attached map). As depicted, the bridge approach replaces a section of, and joins with, the existing Route 119.

The existing historic bridges will be minimally rehabilitated by NH DOT in accordance with the Secretary of the Interior's Standards, for recreational use by NH and VT residents and visitors. VT and NH DOTs will share maintenance responsibilities.

Above-Ground Historic Resources

The bridge carrying Route 119 over the main channel (western side) of the Connecticut River (Bridge No. 041/040) is a single-span, steel Parker truss structure carrying one lane of traffic in each direction. It has a span length of 330 feet and width between curbs of 20.2 feet. The bridge was originally constructed in 1920, with much of the floor system replaced in 1988. The bridge retains a high degree of historic integrity, is individually eligible for the National Register of Historic Places, and constitutes an important gateway into the City of Brattleboro.

The bridge carrying Route 119 over the side channel (eastern side) of the Connecticut River (Bridge No. 042/044) also built in 1920 is a three-span steel structure carrying one lane of traffic in each direction. The main span has a through truss superstructure with a span length of 200 feet. The approach spans have deck plate-girder superstructures with span lengths of 47 feet. Much of the main span floor system was replaced in 1988 and the approach span superstructures were replaced and a new asphalt filled, galvanized bridge plank deck was installed on the truss span at the same time. The abutments are constructed of concrete, as are the frame type piers. A 6-foot wide sidewalk cantilevered from the north side, was added in 1933. Both spans appear eligible for the National Register, significant as major engineering works illustrating the standardized bridge building practice of the early 20th century.

On the Vermont side, no historic properties within the project area other than the bridge span appear eligible for the National Register, and none will be adversely affected by this project (see VTrans Gurley comments and VT SHPO concurrence - 10/17/99).

On the New Hampshire side, historic properties in the project area were identified by Liz Pritchett Associates of Montpelier, VT in December, 1996. Ms Pritchett's 12/10/96 report indicates the presence of three historic properties appearing eligible for the National Register of Historic Places being site #'s 1, 2, and 8 (please refer to attached descriptions, maps, plans and photos keyed to these numbers. None of the buildings (#'s 1,2) will be taken by this project and the historic bridge (#8) will be rehabilitated consistent with the Secretary's Standards.

Though the bridge is to be rehabilitated and retained for recreational use, its original and

primary function of carrying vehicular traffic as a gateway into downtown Brattleboro will be lost. To compensate, the new bridge will be designed by NH DOT in partnership with the Brattleboro-Hinsdale Bridge Committee, which will be reactivated. The Committee will be organized by the Windham Regional Planning Commission to have comprehensive representation from NH and VT as it did during the Scoping phase of this project. The Committee input into the design process will be a meaningful and important element in the final design.

Archaeological Resources An archeological investigation was conducted on the VT and NH sides by UM-F who concluded that the project will have no potential to cause effects on identified archaeological resources. The VDHP concurred and the sign-off sheet is attached.

Assessment of Effect Based on our review of the project plans, public involvement documentation, and visits to the project site, we have concluded that the project will have No Adverse Effect on historic properties listed in or eligible for the National Register of Historic Places - provided that the Brattleboro-Hinsdale Bridge Committee is a full partner in the design of the new bridge.

VT FEDERAL HIGHWAY ADMINISTRATION

By: Charles E. Basner Date: 9-6-00
Charles Basner, Division Administrator

VT DIVISION FOR HISTORIC PRESERVATION

By: Emily Wadhams Date: 9/6/00
Emily Wadhams, State Historic Preservation Officer

VT AGENCY OF TRANSPORTATION

By: John H. Perkins Date: 6 Sept 00
John H. Perkins, Director, Technical Services

NH FEDERAL HIGHWAY ADMINISTRATION

Kathleen G. Laffey Date: 9/6/00
for Kathleen G. Laffey, Administrator, NH-FHWA

NH DEPARTMENT OF HISTORICAL RESOURCES, SHPO

Nancy C. Dutton Date: 9/6/00
Nancy C. Dutton, NHDHR, SHPO

NH DEPARTMENT OF TRANSPORTATION

Joyce B. McKay Date: 9/6/00
Joyce B. McKay, Historian

Army Corps Secondary Impacts Checklist (Appendix B)



**US Army Corps
of Engineers**
New England District

**New Hampshire General Permits (GPs)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)**

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to “work” include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	X	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/ . The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	X	
2.5 The overall project site is more than 40 acres?		X
2.6 What is the area of the previously filled wetlands?	N/A	
2.7 What is the area of the proposed fill in wetlands?	14,711 SQ FT	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	N/A	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	X	

3.2 Would work occur in any area identified as either “Highest Ranked Habitat in N.H.” or “Highest Ranked Habitat in Ecological Region”? (These areas are colored magenta and green, respectively, on NH Fish and Game’s map, “2010 Highest Ranked Wildlife Habitat by Ecological Condition.”) Map information can be found at: <ul style="list-style-type: none"> • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html. 	X	
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?	X	
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?		X
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.

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

**NH Department of Transportation
Hinsdale-Brattleboro, 12110C**

NH ROUTE 119

ACOE Appendix B Supplemental Narrative

1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water?

The portion of the Connecticut River that flows through the project area (NHDES Assessment Unit ID: NHIMP801070507-01) is not listed on the NHDES draft 2018 State 303(d) List as having any water quality impairments. The boat launch portion of the proposed project is located on a section of the Connecticut River (NHDES AUID: NHRIV802010501-05) that is listed as impaired for aquatic life by aluminum and copper. The project will be constructing three stormwater treatment areas and is expected to result in a net improvement in water quality of stormwater runoff within the project area.

2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?

The proposed project is located over the Connecticut River. There is also a small intermittent stream located in the vicinity of the boat launch.

2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?

The proposed crossing consists of a 1,809-foot long, 8-span bridge structure over the Connecticut River. This structure has been adequately designed to maintain existing hydrology, sediment transport and wildlife passage.

The intermittent stream in the vicinity of the boat launch currently sheet flows across an existing access road. The proposed project will install a culvert allowing this stream to pass underneath the access road. The culvert will improve conditions in the stream since it will channelize flow under the access road and vehicles will no longer be driving through the stream.

2.4 Would the project remove part or all of a riparian buffer?

The construction of the proposed bridge would result in the removal of a small area of riparian buffer on the eastern and western banks of the Connecticut River. On the eastern bank on the New Hampshire side, there is a wooded area south of the existing bridge. This area is approximately 50 feet wide. Along the western bank on the Vermont side, there is a narrow wooded riparian buffer approximately 20 feet wide. Both areas would require clearing in order to construct the bridge structure.

3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project?

The NH Natural Heritage Bureau identified occurrences of State-listed aquatic and wetland species in the vicinity of the project. Plant surveys have been completed and coordination with the Natural Heritage Bureau has identified avoidance and minimization measures that will be implemented during construction.

Recorded occurrences of wildlife consist of the following:

Bald Eagle – NH Fish and Game does not anticipate impacts since proposed work activities will not occur within a ¼ mile of known nest sites.

Small-footed Bat – There is no suitable habitat (ledge, talus slopes) for small-footed bat in NH; therefore, no impacts to this species are anticipated in NH. The only potentially suitable habitat for this species within the Vermont project area consists of a stone retaining wall along VT Route 142. Since only the lower portion of the wall will be impacted, it is unlikely that the project will impact this species. Project information was sent to VT Fish & Wildlife; no reply has been received. Two buildings will be removed as part of this project: a two-story house located above the stone retaining wall and a warehouse structure, known as the Blue Seal Building, located on the east side of VT142. Since these buildings have not been surveyed for bats, they will be removed during the winter to minimize potential impacts.

Shortnose Sturgeon – NH Fish and Game and the NOAA Greater Atlantic Fisheries Office agree that the project is not expected to impact sturgeon since this species has not been documented upstream of the Vernon Dam.

Northern Long-Eared Bat – The project was reviewed under the FHWA Programmatic Consultation for Northern Long-eared Bat. It was determined that the proposed project may affect, is likely to adversely affect (LAA) northern long-eared bat due to active season tree clearing. The USFWS confirmed that the project is consistent with the Programmatic Biological Opinion and is therefore not likely to jeopardize the continued existence of the northern long-eared bat.

Dwarf Wedgemussel – A dive survey was completed in 1999, and a shoreline survey was completed in 2009. No dwarf wedge mussels were found during either survey. The project area is outside the known extent of dwarf wedgemussel populations in the Connecticut River and the USFWS has no concerns with the project.

American Shad – The American shad is protected under the Anadromous Fish Conservation Act and restoration efforts are underway from Maine to Virginia. The restoration of American shad in eastern Atlantic rivers is a cooperative effort between the USFWS, other Federal agencies, State fish and wildlife agencies located within the watershed, non-governmental organizations and the fishing industry. Shad inhabit oceanic waters and migrate into freshwater rivers to spawn. Shad migration into the Connecticut River occurs primarily between early May and mid-June, with spawning occurring as far north as Saxtons River, VT, approximately 30 miles north of the project. Following coordination with NH Fish & Game and VT Fish & Wildlife, it was determined that elevated underwater noise levels associated with pile driving were the primary concern during construction of the new bridge. The estimated area impacted by underwater noise will extend approximately 300 feet from each pile as it is driven (based on NOAA's acoustic calculator). The width of the river channel to the west of the island is approximately

800' and the width of the river channel to the east of the island is approximately 500'. This means that there will always be a large portion of the river that is not impacted by noise during pile driving where shad can take refuge. If the Contractor chooses to drive piles at more than one location at a time, the Contract will contain language that requires more than 600 feet between any pile driving activity so that there is always a safe zone of passage for fish that remains unimpacted by noise from pile driving. Additionally, it has been documented that shad spawning takes place at night, and pile driving will take place during daylight hours only, which would reduce impacts to shad that may be spawning in the vicinity of the project.

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"?

The Connecticut River has been identified in the 2015 Wildlife Action Plan as Highest Ranked Habitat in New Hampshire. The proposed project involves the construction of a new bridge over the Connecticut River including work within the channel for the construction of bridge piers and abutments. The proposed boat launch improvements are also located within Highest Ranked Habitat in the State.

4.2 Will compensatory flood storage be provided if the project results in a loss of flood storage?

The project will result in a slight increase in base flood elevation. A FEMA Conditional Letter of Map Revision will be prepared and submitted to FEMA for approval. However, the slight increase in the base flood elevation is not expected to result in any significant change in the mapped flood hazard zones used for insurance; therefore, the project is not expected to cause or increase flooding on adjacent properties and compensatory flood storage is not proposed.

5. For a minor or major project, a copy of the RPR shall be sent to the NH Division of Historical Resources.

The NH Department of Transportation has coordinated with the Vermont Agency of Transportation Historic Preservation Officer (VTrans HPO), VTrans Archaeology Officer, NH State Historic Preservation Office (NH SHPO), and the Federal Highway Administration (FHWA), to locate and identify properties listed in or eligible for the National Register of Historic Places within the project area. Effects on cultural resources were determined based on the Section 106 review process established by the National Historic Preservation Act. It has been determined that the Proposed Action would result in No Historic Properties Affected.

Photographs

Hinsdale, NH – Brattleboro, VT 12210C
NH Route 119 Bridge Project



Photo 1: View from NH bank to mid-channel island [Photo Direction W (12/06/2017)]; Wetland impact locations B1, C, E

Hinsdale, NH – Brattleboro, VT 12210C
NH Route 119 Bridge Project



Photo 2: NH bank [Photo Direction N (12/06/2017)]; Wetland impact locations F and B2

Hinsdale, NH – Brattleboro, VT 12210C
NH Route 119 Bridge Project



Photo 3: Connecticut River from VT bank [Photo Direction N (12/06/2017)]; Wetland impact locations C, B1

Hinsdale, NH – Brattleboro, VT 12210C
NH Route 119 Bridge Project



Photo 4: PEM5D wetland area along toe-of-slope of NH Route 119 east of Norm's Marina Driveway [Photo Direction NW (12/06/2017)]; Wetland impact location G

Hinsdale, NH – Brattleboro, VT 12210C
NH Route 119 Bridge Project



Photo 5: Approximate location of proposed drainage outlet north of existing bridge [Photo Direction SW (6/5/2018)]; Wetland impact location H



Photo 6: Existing boat launch area in Hinsdale, NH [Photo Direction N (05/08/2018)]; Wetland impact locations I, M

Hinsdale, NH – Brattleboro, VT 12210C
NH Route 119 Bridge Project



Photo 7: Existing boat launch area [Photo Direction W (06/05/2018)]; Wetland impact locations I, M



Photo 8: Intermittent stream at boat launch from access road facing upstream [Photo Direction S (06/05/2018)]; Wetland impact locations K, L

Hinsdale, NH – Brattleboro, VT 12210C
NH Route 119 Bridge Project



Photo 9: Intermittent stream sheet flows across access road [Photo Direction S (06/05/2018)]; Wetland impact locations K, L



Photo 10: PFO1E wetland east of existing boat launch [Photo Direction S (06/05/2018)]; Wetland impact location L

Construction Sequence

The overall duration of the project is planned for 4 construction season. The project completion is planned for fall 2023.

Construction Sequence

Spring 2020	Advertise (May 26, 2020)
Fall 2020	Begin Construction
Spring 2020 – Fall 2020	VT utility work
Fall 2020	Rough in Pond 4 (NH) (for construction use) <i>Construct access/maintenance road for Pond 4, pond berm, silt fence and silt sock as needed, seed/matt as needed for temporary water quality use during construction.</i>
Fall 2020 – Fall 2021	Construct Trestle (some pier work can begin prior to trestle completion) <i>Some embankment work will be needed to access the river. Clearing will occur within the limits of the temporary trestle access embankment. Silt fence, matting, and turf establishment for temporary erosion control for trestle embankment connecting NH Route 119 to trestle adjacent to river. (Stumps can be left in place)</i>
Winter 2020 – Spring 2021	Construct Pier 7 <i>Construct cofferdam and silt boom for pier construction. Remove cofferdam and silt boom by completion of the pier.</i>
Fall 2020 - Winter 2021	Construct Abutment B (NH) <i>Construct silt fence and silt sock as needed.</i>
Spring 2021	Steel Span 8
Spring 2021 – Fall 2021	Construct Pier 6 <i>Construct cofferdam and silt boom for pier construction. Remove cofferdam and silt boom by completion of the pier.</i>
Spring 2021 – Fall 2021	Construct Pier 5 <i>Construct cofferdam and silt boom for pier construction. Remove cofferdam and silt boom by completion of the pier.</i>
Summer 2021 – Fall 2021	Construct Pier 4 <i>Construct cofferdam and silt boom for pier construction. Remove cofferdam and silt boom by completion of the pier.</i>
Summer 2021	Rough in Pond 1 (Gravel Wetland) (for construction use, includes bypass drainage south of intersection and jacking under RR) <i>Construct access/maintenance road, silt fence and silt sock as needed, seed/matt as needed for temporary water quality use during construction.</i>
Fall 2021	Steel Span 7
Fall 2021	Steel Span 6
Fall 2021	Steel Span 5
Fall 2021 – Winter 2022	Construct Pier 3 <i>Construct cofferdam and silt boom for pier construction. Remove cofferdam and silt boom by completion of the pier.</i>
Fall 2021 – Winter 2022	Construct Abutment A and Pier 1 (VT) <i>Construct silt fence and silt sock as needed.</i>
Winter 2022	Steel Span 4
Winter 2022	Steel Span 1

Fall 2021 – Spring 2022	Construct Pier 2 <i>Construct cofferdam and silt boom for pier construction. Remove cofferdam and silt boom by completion of the pier.</i>
Spring 2022	Steel Span 3
Spring 2022	Steel Span 2
Spring 2022 – Fall 2022	VT 142/VT 119/MSE walls <i>Construct silt fence and silt sock as needed. Bypass drainage north of intersection and parking lot drainage. The drainage outlet to Connecticut River will employ a pipe jacked under the nearby railroad. A temporary platform will be constructed in the river embayment area to provide a stable platform for jacking operations. Access to the site will be achieved off the railroad embankment. Clearing will occur within the wetland buffer area (Stumps can be left in place). MSE walls Construct silt fence and silt sock as needed. Embankment lift Most of the drainage through the embankment lift to be treated in Gravel Wetland.</i>
	Guardrail
Spring 2022 – Fall 2022	Bridge Deck
Summer 2022 – Fall 2022	Bridge Sidewalk/Coping
Fall 2022	Bridge Rail
Fall 2022	Finalize Pond 1 (Gravel Wetland) <i>Bypass and treat runoff around/through Gravel Wetland site. Clean up any construction residue. Construct Gravel Wetland to plan. Allow runoff to be outlet to the Gravel Wetland when vegetation is established within the Gravel Wetland pond area.</i>
Spring 2023	Bridge Deck Membrane and Bridge Pavement
Spring 2023 – Summer 2023	Remove Trestle 9 <i>Access embankment will be removed to pre-construction limits.</i>
Spring 2023 – Summer 2023	NH 119/Mountain Road/Marina Drive <i>Construct silt fence and silt sock as needed.</i>
Summer 2023	Finalize Pond 4 <i>Bypass and treat runoff around/through Pond 4 site. Clean up any construction residue. Construct Pond to plan. Allow runoff to be outlet to Pond 4 when vegetation is established within the pond area.</i>
Summer 2023	Final Pavement/Pavement Markings
Fall 2023	Project clean up/punch list items

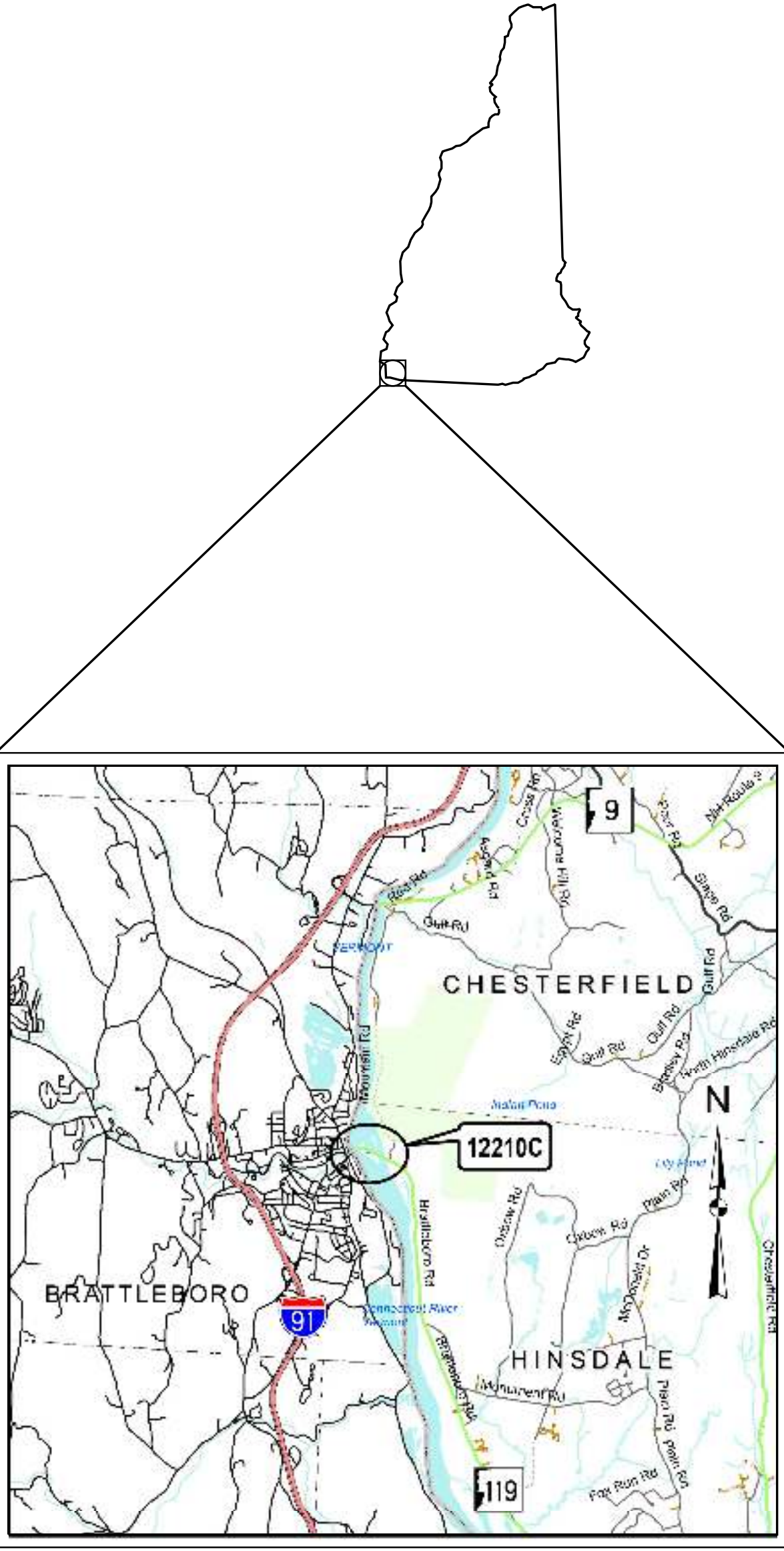
The boat ramp work can be done at any time during the 4 year construction. Language will be added to the contract concerning any determined intermediate completion date or directing the Contractor to construct the ramp within any one construction season (once work is started on the boat ramp it must then be worked to completion within a given construction season approved by the engineer).

The existing bridges will be in use until traffic has been shifted to the relocated bridge. The access to the island will be gated to limit motorized access to emergency/police/maintenance activities. The existing bridges will be rehabilitated under a separate contract, 12210D, and used as a bike-pedestrian trail.

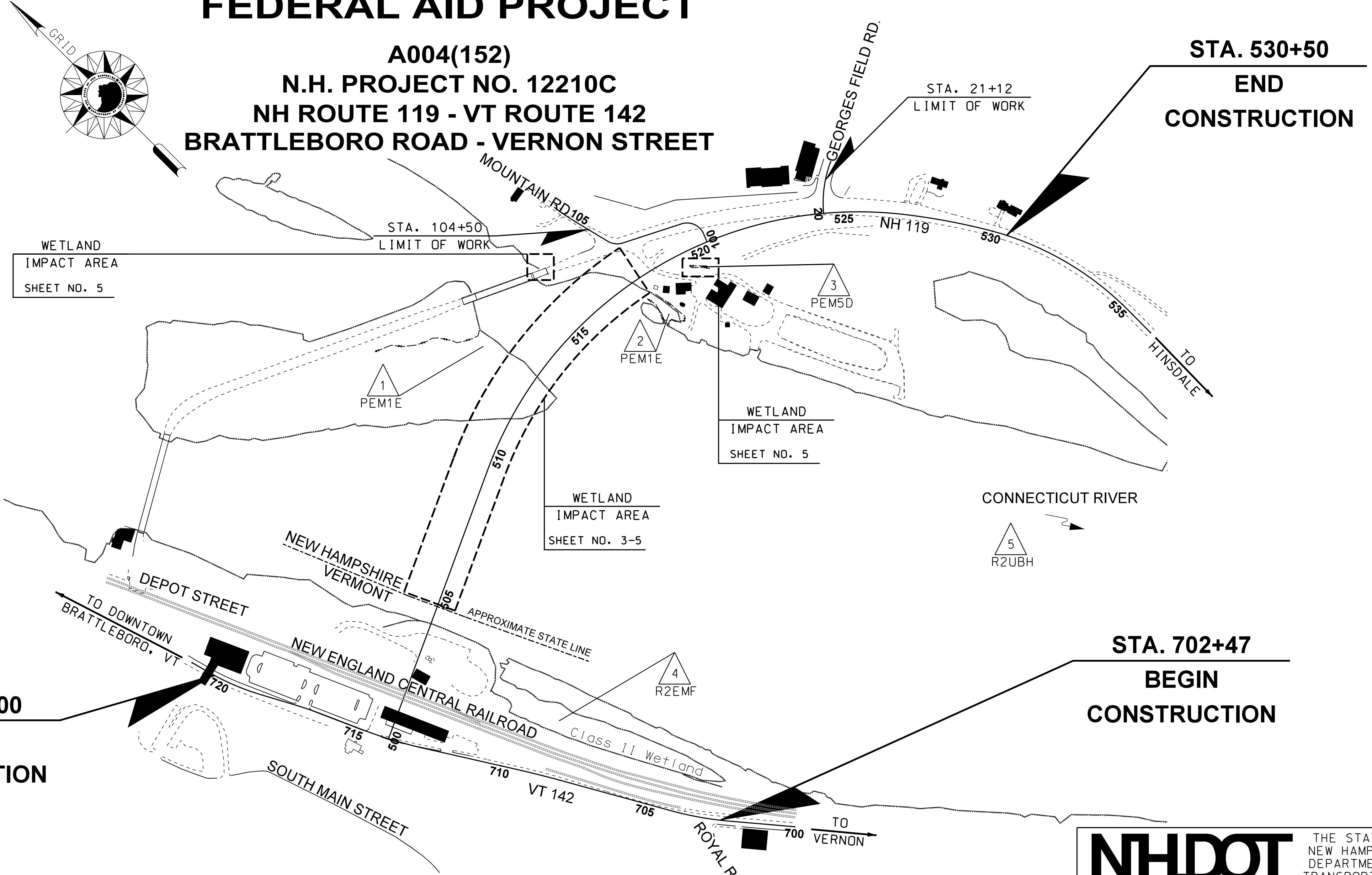
Wetland Impact & Erosion Control Plans

**STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
WETLANDS PLANS
FEDERAL AID PROJECT**

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20_20	NH 119 - VT 142 8900 - 2600
AVERAGE DAILY TRAFFIC 20_40	11000 - 3200
PERCENT OF TRUCKS	5.1% - 11.2%
DESIGN SPEED	35mph - 30mph
LENGTH OF PROJECT	3050ft - 1625ft



LOCATION MAP



**STA. 720+00
END
CONSTRUCTION**

**STA. 702+47
BEGIN
CONSTRUCTION**

TOWN OF HINSDALE NH - BRATTLEBORO VT

COUNTY OF CHESHIRE - WINDHAM

SCALE: 1" = 200'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

WETLANDS DELINEATED BY:
CHRISTINE PERRON,
MCFARLAND JOHNSON
2017, 2018



NHDOT THE STATE OF
NEW HAMPSHIRE
DEPARTMENT OF
TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER DATE

DRAWING NAME	FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CFSW	A004(152)	12210C	1	13

DRAWN BY: GRR
CHECKED BY: TWC
DATE: 11/2018
DATE: 12/2018

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-WO 1500 REQUIREMENTS ([HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM](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 30th AND MAY 1st 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 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, 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 15th, OR WHICH ARE DISTURBED AFTER OCTOBER 15th, SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
 - (C) AFTER NOVEMBER 30th 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-WO 1505.02 AND ENV-WO 1505.05.
 - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WO 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30th.

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 1st THROUGH NOVEMBER 30th, 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-WO 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-WO 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-WO 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-WO 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-WO 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				
HINSDALE NH - BRATTLEBORO VT				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
WETLAND IMPACT PLANS				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	erosstrat	12210C	2	13

SDR PROCESSED	DATE	5/2019
	NEW DESIGN	ALK
	SHEET CHECKED	TWC
	AS BUILT DETAILS	
REVISIONS AFTER PROPOSAL	NUMBER	
	DATE	
	STATION	
	DESCRIPTION	

WETLAND CLASSIFICATION CODES	
PEM1E	PALUSTRINE, EMERGENT, PERSISTENT, SEASONALLY FLOODED/SATURATED
PEM5D	PALUSTRINE, EMERGENT, PHRAGMITES AUSTRILIS, CONTINUOUSLY SATURATED
PF01E	PALUSTRINE, FORESTED, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOODED/SATURATED
R2EMF	RIVERINE, LOWER PERENNIAL, EMERGENT, SEMIPERMANENTLY FLOODED
R2UBHh	RIVERINE, LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, PERMANENTLY FLOODED, DIKED/IMPOUNDED
R4SB4	RIVERINE, INTERMITTENT, STREAMBED, SAND
BANK	BANK
BUFFER	50 FT BUFFER AREA ADJACENT TO DELINEATED WETLAND (VT)

WETLAND IMPACT SUMMARY - NEW HAMPSHIRE													
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION			COMMENTS	
			PERMANENT		N.H.W.B. & A.C.O.E. (WETLAND)		TEMPORARY		BANK LEFT	BANK RIGHT	CHANNEL		
			N.H.W.B. (NON-WETLAND)	SF	LF	SF	LF	SF					LF
5	R2UBHh	B1						82081	115				TEMPORARY BRIDGE CONSTRUCTION ACCESS (TRESTLE) *SEE NOTE 1 BELOW
4	BANK	B2						1529	62				TEMPORARY BRIDGE CONSTRUCTION ACCESS (TRESTLE) *SEE NOTE 1 BELOW
5	R2UBHh	C			7572	209						209	PIERS IN RIVER
1	PEM1E	D						13020	---				TEMPORARY CONSTRUCTION EASEMENT (TRESTLE OVER ISLAND)
1	PEM1E	E			1664	---							PIER ON ISLAND
4	BANK	F	381	50							50		PIER
3	PEM5D	G			295	---							ROADWAY EMBANKMENT
2	BANK	H	63	7							7		PIPE OUTLET / STONE APRON
5	R2UBHh	I			891	22						22	BOAT LAUNCH IN CONNECTICUT RIVER
6	PF01E												
8	R4SB4	K			212	105						134	BOAT LAUNCH ACCESS DRIVE/SLOPES
7	PF01E	L			3742	---							BOAT LAUNCH ACCESS DRIVE/SLOPES
9	BANK	M	1011	97							91		BOAT LAUNCH TO CONNECTICUT RIVER
TOTAL			1455	154	14376	336	96630	177					

NEW HAMPSHIRE IMPACTS
PERMANENT IMPACTS: 15831 SF
TEMPORARY IMPACTS: 96630 SF

TOTAL IMPACTS: 112461 SF
(2.582 ACRES)

*NOTE 1: THIS AREA IS FOR THE FOOTPRINT OF THE TEMPORARY ACCESS TRESTLE OVER THE CONNECTICUT RIVER. DIRECT IMPACTS TO THE RIVER WILL BE APPROXIMATELY 560 PILES (14"x14") WHICH WILL BE DRIVEN INTO THE RIVER BANK TO SUPPORT THE ACCESS TRESTLE. THIS IS APPROXIMATELY 765 SF OF RIVER AND BANK IMPACTS.

STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT SUMMARY SHEET			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CwetplansNH	12210C	3	13

WETLAND IMPACTS IN VERMONT WILL BE COVERED BY STATE OF VERMONT PERMITTING

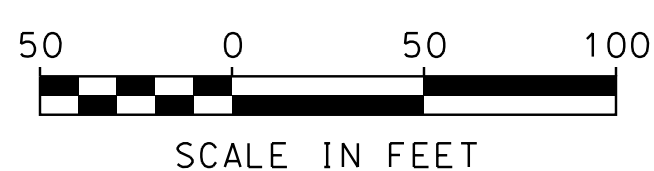
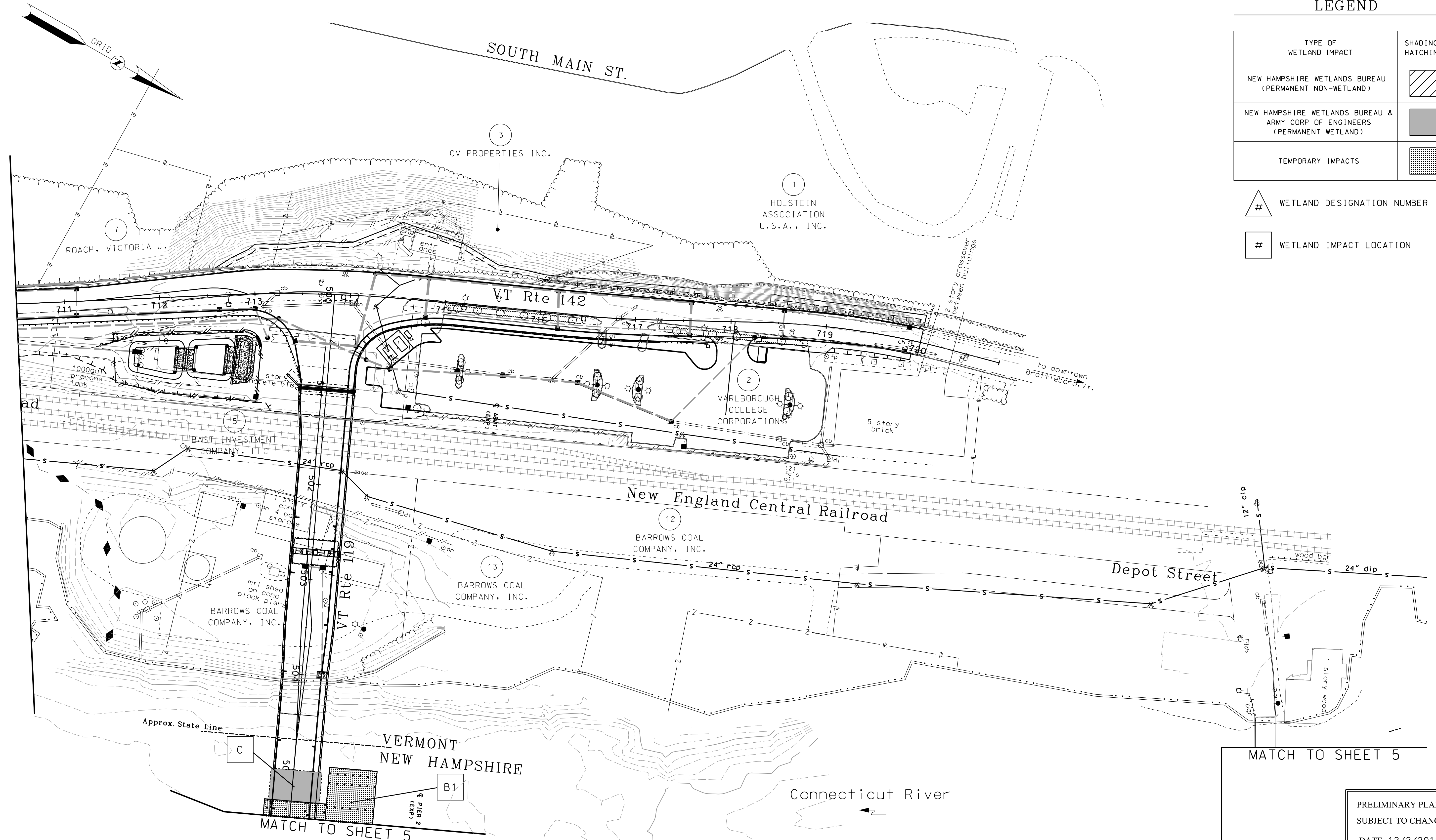
LEGEND

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

SDR PROCESSED	PLAN PREP	DATE	7/2017
NEW DESIGN	TWC	DATE	3/2019
SHEET CHECKED	ALK	DATE	3/2019
AS BUILT DETAILS		DATE	

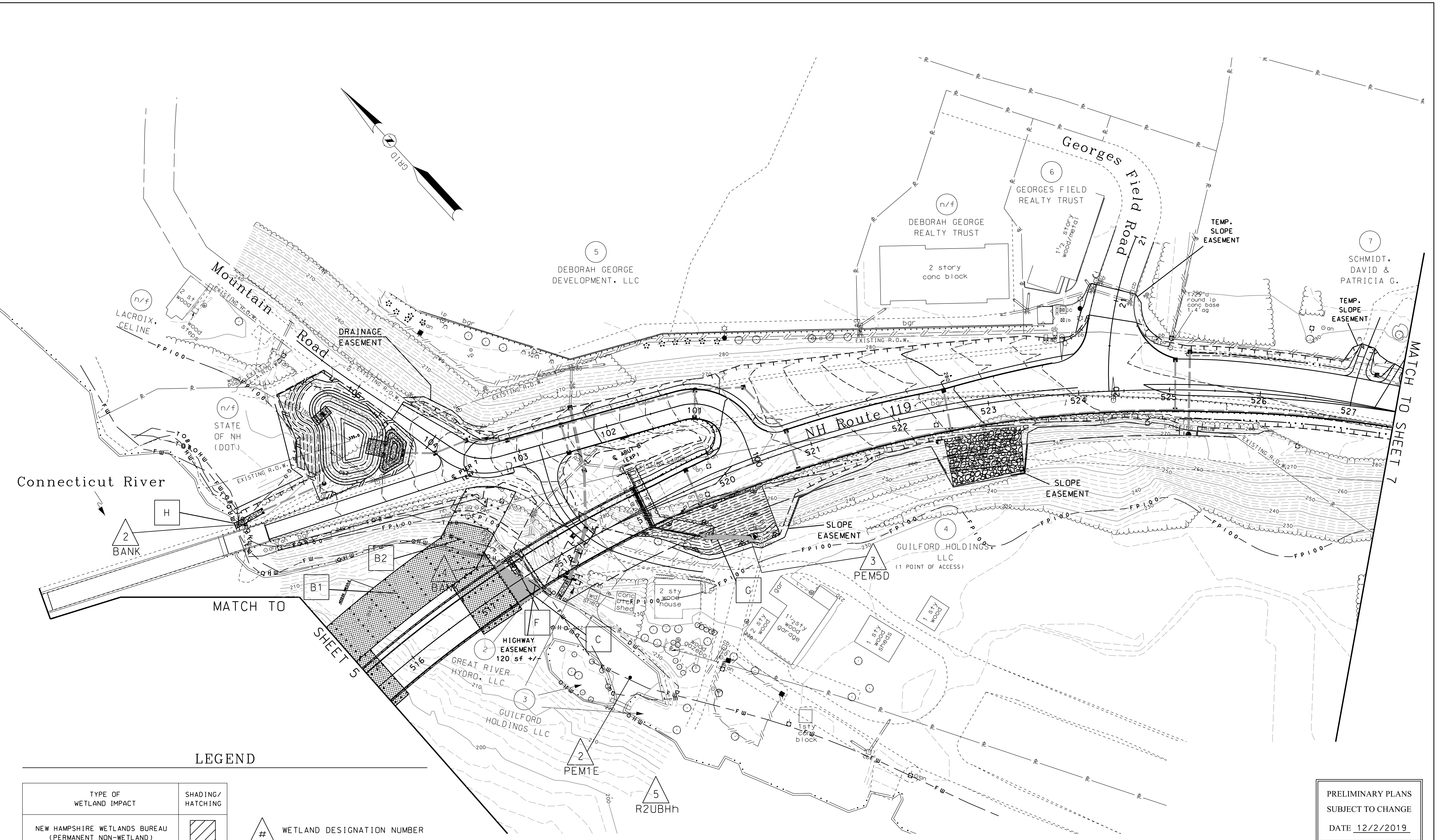


MATCH TO SHEET 5

PRELIMINARY PLANS
SUBJECT TO CHANGE
DATE 12/2/2019

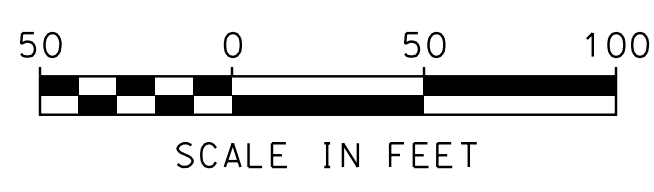
STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT PLANS			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CwetplansNH	12210C	4	13

SDR PROCESSED NEW DESIGN SHEET CHECKED AS BUILT DETAILS	PLAN PREP	DATE	7/2017
	TWC	DATE	3/2019
	ALK	DATE	3/2019
		DATE	
REVISIONS AFTER PROPOSAL		STATION	DESCRIPTION



LEGEND

TYPE OF WETLAND IMPACT	SHADING/HATCHING		
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)			WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)			WETLAND IMPACT LOCATION
TEMPORARY IMPACTS			



PRELIMINARY PLANS
SUBJECT TO CHANGE
DATE 12/2/2019

STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT PLANS			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CwetplansNH	12210C	6	13

SDR PROCESSED	PLAN PREP	DATE	7/2017
NEW DESIGN	TWC	DATE	3/2019
SHEET CHECKED	ALK	DATE	3/2019
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	DESCRIPTION



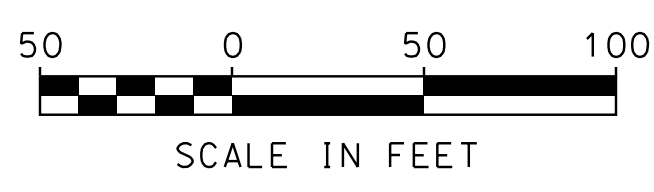
LEGEND

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

PRELIMINARY PLANS
SUBJECT TO CHANGE
DATE 12/2/2019

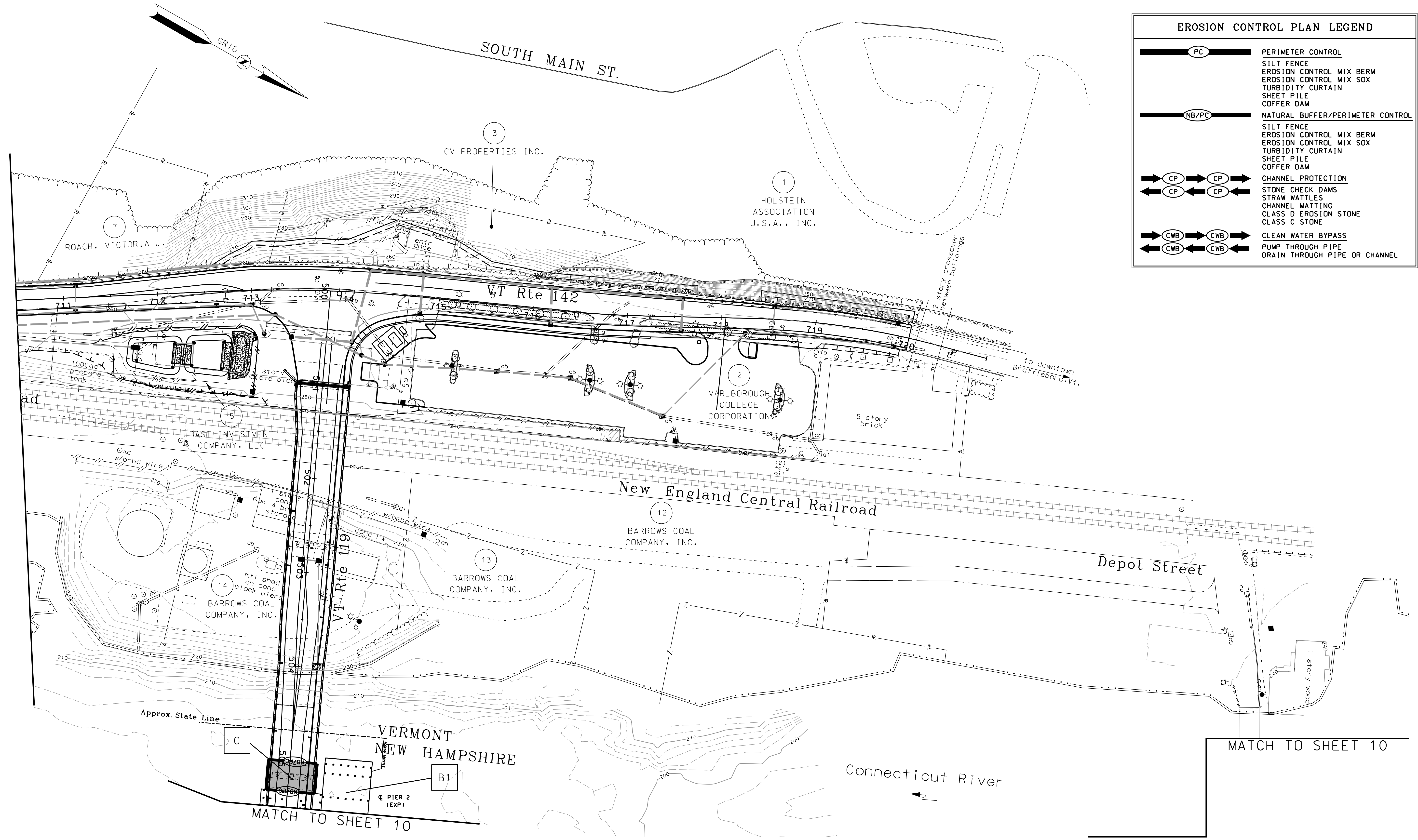
STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
WETLAND IMPACT PLANS			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CwetplansNH	12210C	7	13



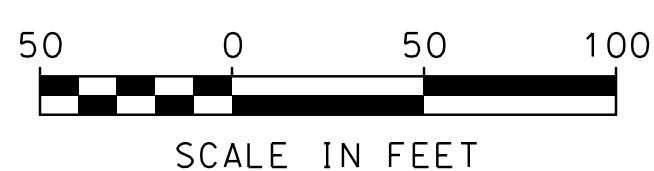
WETLAND IMPACTS IN VERMONT WILL BE COVERED BY STATE OF VERMONT PERMITTING

SDR PROCESSED	PLAN PREP	DATE	7/2017
NEW DESIGN	TWC	DATE	12/2018
SHEET CHECKED	ALK	DATE	12/2018
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
STATION	
DATE	
NUMBER	

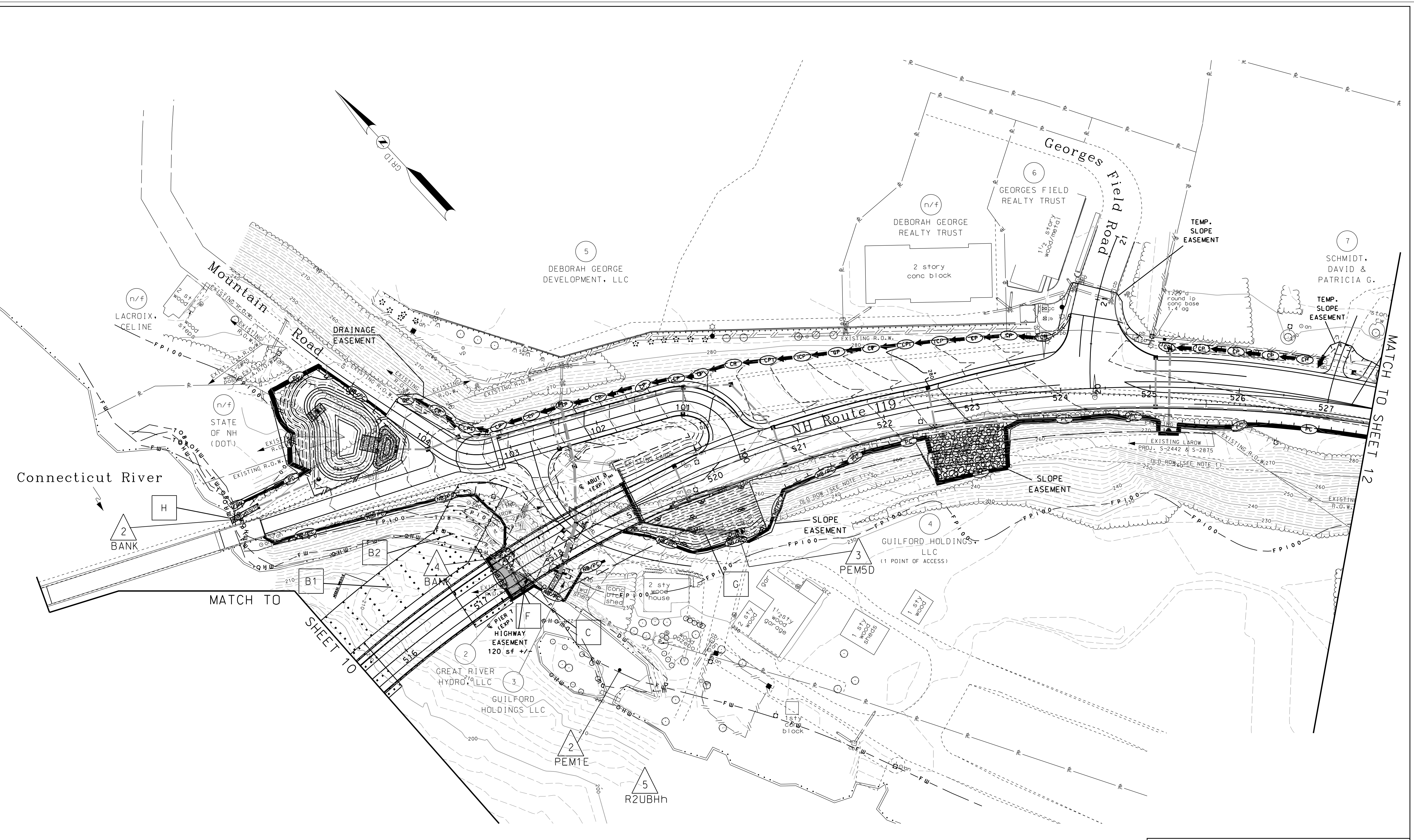


EROSION CONTROL PLAN LEGEND	
	PERIMETER CONTROL
	NATURAL BUFFER/PERIMETER CONTROL
	CHANNEL PROTECTION
	CLEAN WATER BYPASS
	PUMP THROUGH PIPE
	DRAIN THROUGH PIPE OR CHANNEL



STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
EROSION CONTROL PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CercNH	12210C	9	13

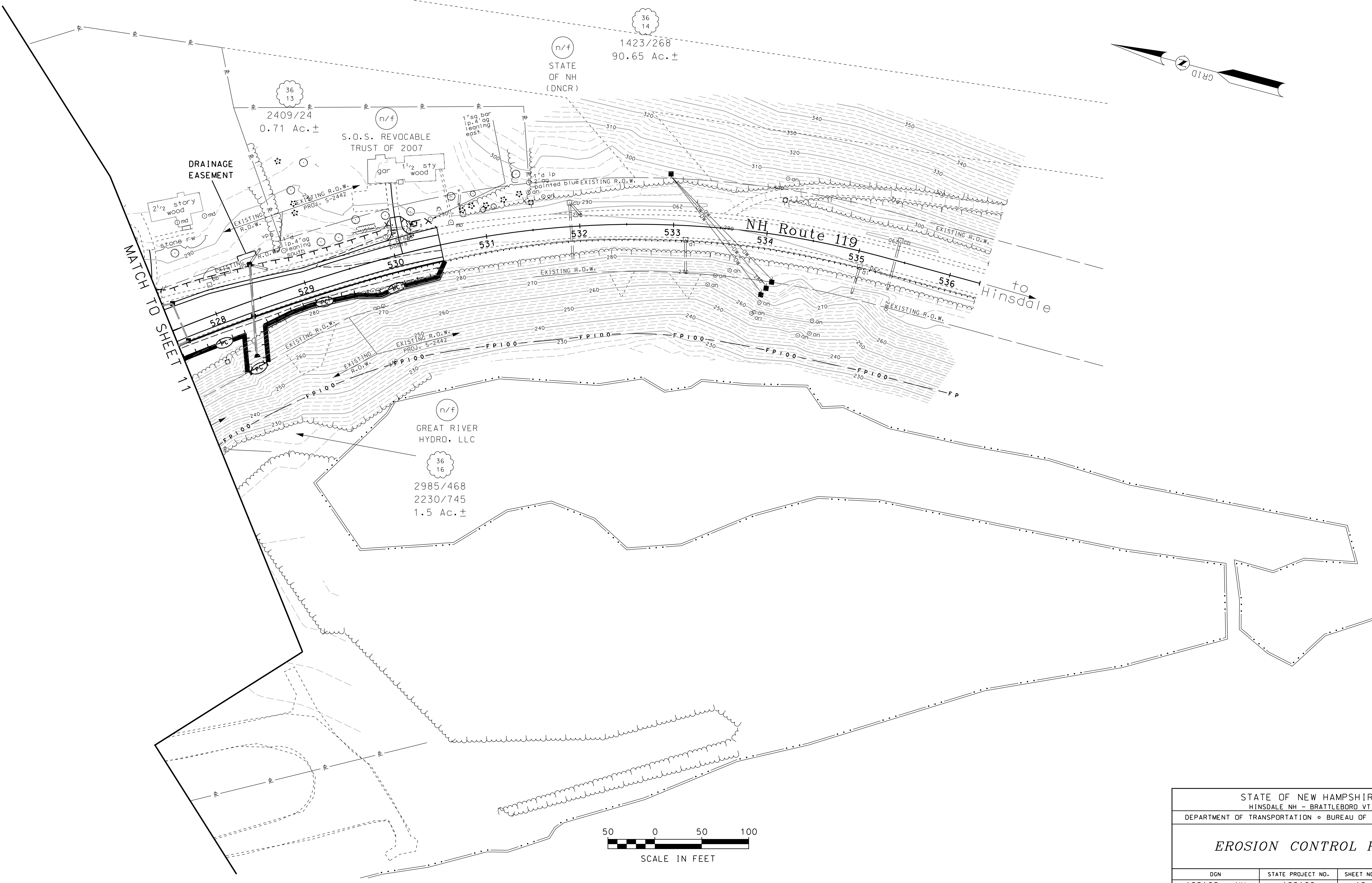
SDR PROCESSED	PLAN PREP	DATE	7/2017
NEW DESIGN	TWC	DATE	12/2018
SHEET CHECKED	ALK	DATE	12/2018
AS BUILT DETAILS		DATE	



STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
EROSION CONTROL PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CercNH	12210C	11	13

SDR PROCESSED	PLAN PREP	DATE	7/2017
NEW DESIGN	TWC	DATE	12/2018
SHEET CHECKED	ALK	DATE	12/2018
AS BUILT DETAILS		DATE	

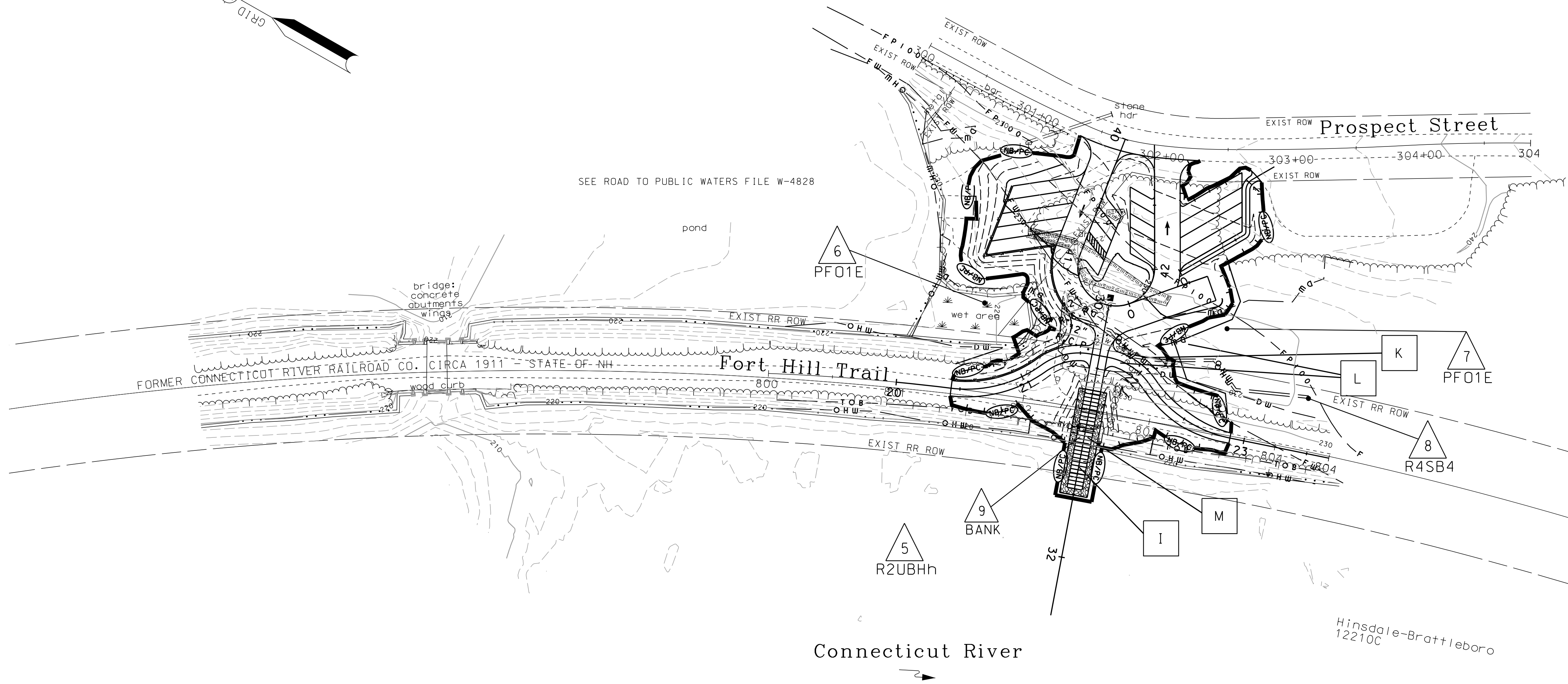
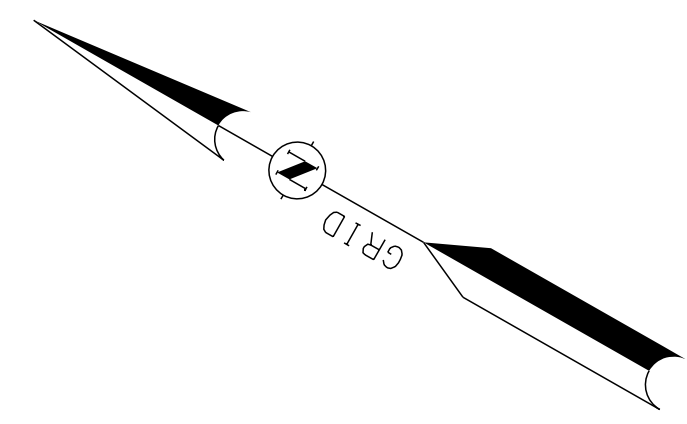
REVISIONS AFTER PROPOSAL	DESCRIPTION
STATION	
STATION	
DATE	
NUMBER	



STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
EROSION CONTROL PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CercNH	12210C	12	13

SDR PROCESSED	PLAN PREP	DATE	7/2017
NEW DESIGN	TWC	DATE	12/2018
SHEET CHECKED	ALK	DATE	12/2018
AS BUILT DETAILS		DATE	

REVISIONS AFTER PROPOSAL	STATION	DESCRIPTION



STATE OF NEW HAMPSHIRE HINSDALE NH - BRATTLEBORO VT			
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN			
EROSION CONTROL PLAN			
DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12210CercNH	12210C	13	13