


STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: January 15, 2016

FROM:  Matt Urban
Wetlands Program Manager

AT (OFFICE): Department of
Transportation

SUBJECT Dredge & Fill Application
Alexandria, 40244

Bureau of
Environment

TO Gino Infascelli, 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 Maintenance for the subject Major impact project. This project is classified as Major per Env-Wt 303.02(p). The project is located on Fowler Rd over Bog Brook in the Town of Alexandria. The proposed work consists of rehabilitating the bridge that carries Fowler River Road over Bog Brook (174/146). The existing structure is a two span concrete slab bridge that has two 13'-0" spans and a 28'-0" deck width. The proposed work consists of replacing the concrete deck, removing the center pier from the river, minor widening, and placing riprap.

This project was reviewed at the March 18th, 2015 Natural Resource Agency Coordination Meeting. The minutes from that meeting can be found within this application package as well as on the Departments website via the following link:

<http://www.nh.gov/dot/org/projectdevelopment/environment/units/project-management/nracmeetings.htm>

The Department anticipates mitigation in the amount of \$5,280 for permanent impacts to bank in the form of a single onetime in-lieu fee payment into the Arm-Fund.

The lead people to contact for this project are Steve Johnson, Assistant Administrator, Bureau of Bridge Maintenance (271-3668 or sjohnson@dot.state.nh.us) or Matt Urban, Wetlands Program Manager, Bureau of Environment (271-3226 or murban@dot.state.nh.us).

A payment voucher has been processed for this application (Voucher #422286) in the amount of \$772.80.

If and when this application meets with the approval of the Bureau, please send the permit directly to Matt Urban, Wetlands Program Manager, Bureau of Environment.

MRU:mru
Enclosures

cc:
BOE Original
Town of Alexandria, (4 copies via certified mail)
Randy Talon, Environment
Carol Henderson, NH Fish & Game
Edna Feighner, NH Division of Historic Resources (NHDOT Cultural Review within)
Maria Tur, US Fish & Wildlife
Mark Kern, US Environmental Protection Agency
Michael Hicks, US Army Corp of Engineers



PERMIT APPLICATION

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.
			Check No.
			Amount
			Notes

1. REVIEW TIME:

Indicate your Review Time below. Refer to Guidance Document A for instructions.

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

2. PROJECT LOCATION:

Separate applications must be filed with each municipality that jurisdictional impacts will occur in.

ADDRESS: **Fowler River Road over Bog Brook**

TOWN/CITY: **Alexandria**

TAX MAP:

BLOCK:

LOT:

UNIT:

USGS TOPO MAP WATERBODY NAME: **Bog Brook**

NA

STREAM WATERSHED SIZE: **12.6 mi2**

NA

LOCATION COORDINATES (If known): **43°37'28.64" 071°46'28.73"**

UTM State Plane

Latitude/Longitude

3. 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.

Rehabilitate the bridge that carries Fowler River Road over Bog Brook (174/146). The existing structure is a two span concrete slab bridge that has two 13'-0" spans and a 28'-0" deck width. Proposed work consists of replacing the concrete deck, removing the pier, minor widening, and placing riprap.

4. RELATED PERMITS, ENFORCEMENT, EMERGENCY AUTHORIZATION, SHORELAND, ALTERATION OF TERRAIN, ETC...

5. 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 15 - 0902

b. Designated River the project is in ¼ miles of: _____; and
 date a copy of the application was sent to Local River Advisory Committee: Month: ___ Day: ___ Year: ___

NA

6. APPLICANT INFORMATION (Desired permit holder)LAST NAME, FIRST NAME, M.I.: **Johnson, Steve W**TRUST / COMPANY NAME: **NH Dept. of Transportation**MAILING ADDRESS: **7 Hazen Drive**TOWN/CITY: **Concord**STATE: **NH**ZIP CODE: **03302**EMAIL or FAX: **sjohnson@dot.state.nh.us**PHONE: **603 271 3667**ELECTRONIC COMMUNICATION: By initialing here: SW, I hereby authorize DES to communicate all matters relative to this application electronically**7. PROPERTY OWNER INFORMATION (If different than applicant)**

LAST NAME, FIRST NAME, M.I.:

TRUST / COMPANY NAME:

MAILING ADDRESS:

TOWN/CITY:

STATE:

ZIP CODE:

EMAIL or FAX:

PHONE:

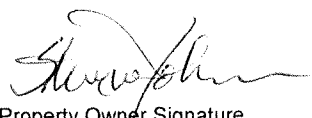
ELECTRONIC COMMUNICATION: By initialing here _____, I hereby authorize DES to communicate all matters relative to this application electronically

8. AUTHORIZED AGENT INFORMATIONLAST NAME, FIRST NAME, M.I.: **Weatherbee, Anthony N**COMPANY NAME: **NH Dept. of Transportation**MAILING ADDRESS: **7 Hazen Drive**TOWN/CITY: **Concord**STATE: **NH**ZIP CODE: **03302**EMAIL or FAX: **aweatherbee@dot.state.nh.us**PHONE: **603-271-3667**ELECTRONIC COMMUNICATION: By initialing here AW, I hereby authorize DES to communicate all matters relative to this application electronically**9. PROPERTY OWNER SIGNATURE:**

See the Instructions & Required Attachments document for clarification of the below statements

By signing the application, I am certifying that:

1. 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.
2. I have reviewed and submitted information & attachments outlined in the Instructions and Required Attachment document.
3. All abutters have been identified in accordance with RSA 482-A:3, I and Env-Wt 100-900.
4. I have read and provided the required information outlined in Env-Wt 302.04 for the applicable project type.
5. I have read and understand Env-Wt 302.03 and have chosen the least impacting alternative.
6. 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.
7. I have submitted a copy of the application materials to the NH State Historic Preservation Officer.
8. I authorize DES and the municipal conservation commission to inspect the site of the proposed project.
9. I have reviewed the information being submitted and that to the best of my knowledge the information is true and accurate.
10. I understand that the willful submission of falsified or misrepresented information to the New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of DES correspondence. DES will not forward returned mail.

 Property Owner Signature	STEVE W JOHNSON Print name legibly	11/30/15 Date
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MUNICIPAL SIGNATURES

10. 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.

Authorized Commission Signature	Print name legibly	Date
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DIRECTIONS FOR CONSERVATION COMMISSION

1. Expedited review ONLY requires that the conservation commission's signature is obtained in the space above.
2. The Conservation Commission signature should be obtained prior to the submittal of the original application and four copies to the town/city clerk for mailing to the DES.
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 reviewed in the standard review time frame.

11. TOWN / CITY CLERK SIGNATURE

As required by Chapter 482-A:3 (amended 1991), I hereby certify that the applicant has filed five application forms, five detailed plans, and five USGS location maps with the town/city indicated below and I have received and retained certified postal receipts (or copies) for all abutters identified by the applicant.

Town/City Clerk Signature	Print name legibly	Town/City	Date
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DIRECTIONS FOR TOWN/CITY CLERK:

Per RSA 482-A:3,1(d):

1. For applications where "Expedited Review" is checked on page 1, accept the application for mailing only if the Conservation Commission signature has been sought;
2. Collect the postal receipts demonstrating that all abutters and the Local Advisory Committee were sent proper notice;
3. Collect any administrative fees, not to exceed \$10 plus the cost of postage by certified mail (RSA 482-A:3,1).
4. IMMEDIATELY sign the original application and four copies in the signature space provided above;
5. Retain one copy of the application form, one complete set of attachments and the postal receipts demonstrating that all abutters and the Local River Advisory Committee were notified and make them reasonably accessible to the public;
6. 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 in accordance with RSA 482-A:3, 1; and
7. IMMEDIATELY send the ORIGINAL application form, one complete set of attachments and filing fee, by CERTIFIED MAIL to the NHDES Wetlands Bureau at the address indicated on page 1 of this application. (DO NOT HOLD FOR CONSERVATION COMMISSION SIGNATURE).

12. 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 complete.

After-the-fact (ATF): work completed prior to receipt of this application by DES. Check box to indicate ATF.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Scrub-shrub wetland		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Emergent wetland		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Wet meadow		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Intermittent stream		<input type="checkbox"/> ATF		<input type="checkbox"/> ATF
Perennial Stream / River	536 / 56	<input type="checkbox"/> ATF	2267 / 106	<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	287 / 48	<input type="checkbox"/> ATF	774 / 91	<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
TOTAL	823 / 104		3041 / 197	

13. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

Minimum Impact Fee: Flat fee of \$ 200

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

Permanent and Temporary (non-docking) 3864 sq. ft. X \$0.20 = \$ 772.80

Temporary (seasonal) docking structure: _____ sq. ft. X \$1.00 = \$

Permanent docking structure: _____ sq. ft. X \$2.00 = \$

Projects proposing shoreline structures (including docks) add \$200 = \$

Total = \$

The Application Fee is the above calculated Total or \$200, whichever is greater = \$ 772.80

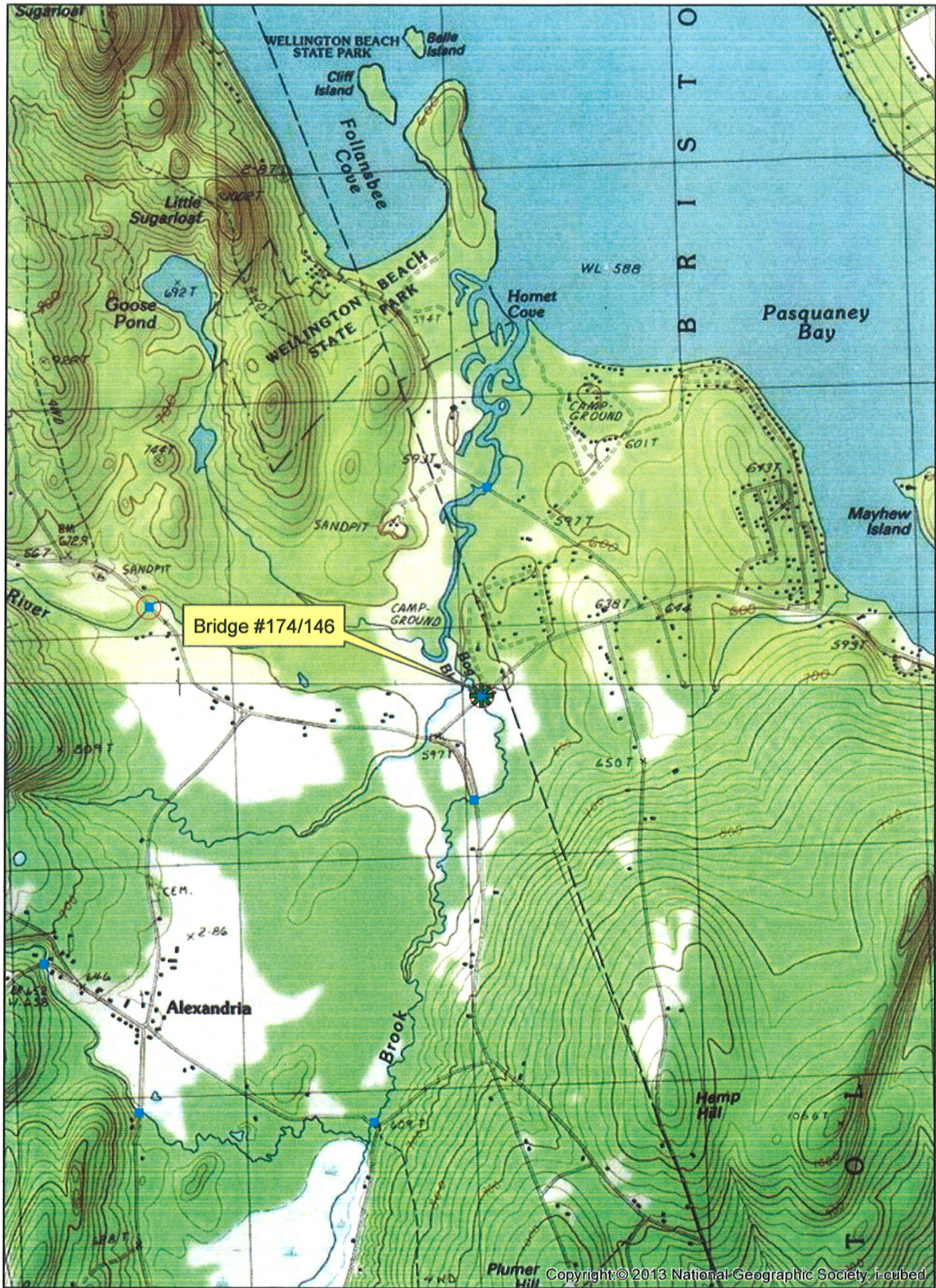
CONSTRUCTION SEQUENCE

1. Sandbags will be placed in the brook and the work zone will be dewatered. Stream flow will be maintained through a diversion pipe or through the natural channel.
2. The substructure will be widened.
3. Phase 1 of the concrete deck and pier will be removed. The deck will be replaced.
4. Phase 2 of the deck and pier will be removed. The remaining portion of the deck will be replaced.
5. Riprap will be placed in front of the abutments and wingwalls.
6. All dewatering devices will be removed and the site will be restored to its original quality.

Note:

Project will use and maintain DES Best Management Practices at all stages of construction.

Alexandria, 40244



0 0.25 0.5 1 Miles

1:24,000



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

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

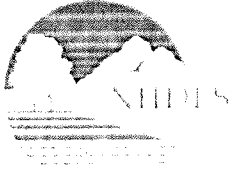
1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to “work” include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See PGP, 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, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org , specifically the book <u>Natural Community Systems of New Hampshire</u> .		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 size of the existing impervious surface area?	7766 ft ²	
2.7 What is the size of the proposed impervious surface area?	7166 ft ²	
2.8 What is the % of the impervious area (new and existing) to the overall project site?	0%	
3. Wildlife	Yes	No
3.1 Has the NHB 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 a NHB determination.)	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/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 PGP, 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?		N/A
5. Historic/Archaeological Resources		
For a minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) shall be sent to the NH Division of Historical Resources as required on Page 5 of the PGP**		N/A

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

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



THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
LAND RESOURCES MANAGEMENT
WETLANDS BUREAU

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

Phone: (603) 271-2147 Fax: (603) 271-6588

<http://des.nh.gov/organization/divisions/water/wetlands/index.htm>

Permit Application Status: <http://des.nh.gov/onestop/index.htm>

PERMIT APPLICATION – ATTACHMENT A
MINOR & MAJOR 20 QUESTIONS

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 existing structure is on the state redlist due to the poor condition of the concrete deck. The structure needs to be rehabilitated and if deterioration is allowed to progress, eventually the structure will become unstable and the road will need to be load posted or closed. Riprap is required to stabilize the substructure. It is necessary to impact jurisdictional areas to provide for the deck replacement, the pier removal, and for access. The impacts are for temporary construction access, minor widening to maintain traffic, the concrete deck replacement, the pier removal, and riprap.

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

The alternatives considered are as follows:

Replace the Entire Structure: Bog Brook has a drainage area of 12.6 square miles which qualifies this stream as a Tier 3 Crossing. The bankfull width is 44'-5"; the required span for a replacement structure based on the NH Stream Crossing Guidelines for a new crossing is 54'-0". A structure of this size typically has an estimated cost of \$1,000,000. The environmental impacts for this alternative are much greater because the existing bridge would have to be taken down and a new, larger structure would be built.

Rehabilitate the Existing Structure: This is the proposed alternative. The concrete deck will be replaced in two phases and it will be widened to accommodate traffic. The pier will be removed in two phases and will not be replaced. This will improve the hydraulics at this location and will return the center of the brook to a more natural state. This alternative proposes the least amount of environmental impacts because construction impacts are less for a rehab than for a replacement, a larger structure will not have to be installed, and the pier removal improves the existing condition. Riprap is required to stabilize the substructure which can be installed more effectively and with fewer impacts when the concrete deck is in the process of being removed. The proposed repair has an estimated cost of \$250,000. This is the most cost-effective solution and also proposes the least amount of wetland impacts. Replacing the entire structure is not considered practicable since the structure can be repaired more cost effectively and with less environmental impacts.

3. The type and classification of the wetlands involved.

R2UB1: Riverine, lower perennial, unconsolidated bottom, cobble gravel

Bank

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

Bog Brook flows into Newfound Lake in the Town of Bridgewater.

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

Bog Brook has not been identified as a rare surface water of the state.

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

2803ft² Riverine (2267ft² temporary, 536ft² permanent)

1080ft² Bank (774ft² temporary, 237ft² permanent)

7. The impact on plants, fish, and wildlife, 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 Wood Turtle was located near the project area. They are listed by the State as a species of Special Concern. Coordination between NH Dept. of Transportation and NH Fish and Game is currently taking place to ensure that the rare or special concern species that were identified within the proposed project area will not be adversely affected.

There are no state or federally listed threatened or endangered species identified within the proposed project area.

As for the Northern Long-eared Bat (NLEB), tree clearing is not required as a result of the proposed work. Furthermore, the Bureau of Bridge Maintenance will be completing a Bridge Inspection Form no more than 7 days prior to commencing construction. If no signs of bat utilization are observed, and no clearing is proposed, the project will have No Effect on NLEB. If any signs of bat utilization are observed, work will not commence until coordination with USFWS and NHDOT Bureau of Environment has been completed.

There are no species known to be at the extremities of their ranges located in Bog Brook or the surrounding area. Migratory fish and wildlife will be protected during this project under the direction of NH Fish and Game.

There are no exemplary natural communities identified within the project area.

There were no vernal pools identified and/or delineated within the project area.

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

During construction, access to the nearby residents and/or commercial businesses will be maintained at all times. Access will not normally be disrupted; but when it is, access will be maintained with at least one lane. Bog Brook is non-navigable water which makes it non-conducive to boaters. There are no recreational areas that have been identified in this area except for the possibility for fishing. During construction fishing activities from the banks of the brook will need to occur outside of the construction work zone. When construction is completed, the project as proposed will be a benefit to the public commerce.

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 project will not significantly interfere with the aesthetic interests of the general public. The proposed improvements will be more pleasing to the eye than the structure in poor condition.

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. During construction at least one lane of alternating traffic will be maintained at all times. This will ensure access to all nearby businesses and residential homes in this area.

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

The project is expected to have a positive impact on abutting properties. The rehabilitated structure will better serve the abutting properties if they need to travel on the road. The riprap that is being installed will prevent a washout of the structure which will better protect abutting properties. Removing the pier will improve the hydraulic situation and flow will be better able to pass through the structure.

The project as proposed will not alter the chance of flooding on abutting properties.

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

The project will provide a safer, longer lasting structure and roadway. If the structure is not rehabilitated, the bridge will eventually be load posted or closed. Keeping the roadway open benefits commerce, trade, emergency access, etc, for the general public.

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 difference in the quality of water entering and exiting the site.

The proposed project will not significantly alter the existing surface water runoff or storm water discharge locations. Best Management Practices will be used to prevent any adverse effect to water quality during construction.

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

Flooding: The removal of the pier and the riprap will not increase the potential of flooding. The structure can pass the 100 year storm event and this project will not significantly change the capacity. The removal of the pier will improve the crossings ability to pass water. The Fowler River sometimes floods but Bog Brook does not typically flood at this location.

Erosion: The riprap placed around the structure will prevent erosion and preserve the natural alignment and gradient of the stream channel. Removing the pier will help prevent erosion from taking place where the pier was.

Sedimentation: Nothing that will be a barrier to sediment transport will be installed in this project. Sedimentation in the open channel will not be caused as a result of this project.

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.

Surface waters will not be reflected or redirected as a result of this project. Bog Brook does not have enough surface water for wave energy to be an issue.

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 alternations 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 ownership of that wetland and the percentage of that ownership that would be impacted.

The work consists of the repair of an existing bridge structure. There are no similar structures in the vicinity owned by other parties that would require repair.

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

The value of the wetland as a habitat for living organisms will be unchanged. A function of Bog Brook is to carry water from a higher elevation to a lower elevation. This project will not interfere with that function.

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.

This project is not located in or near any Natural Landmarks listed on the National Register.

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.

There are no areas named in acts of congress or presidential proclamations as national rivers, national wilderness areas, or national lakeshores that will be impacted as a result of this project.

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

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

Additional comments



THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE MAINTENANCE
7 Hazen Drive, PO Box 483, Concord, NH 03302-0095
Phone: (603) 271-3667 Fax: (603) 271-1588



WETLANDS PERMIT APPLICATION – ATTACHMENT C Stream Crossing Requirements & Information

Env-Wt 904.09(a) – If the applicant believes that installing the structure specified in the applicable rule is not practicable then the applicant may propose an alternative design in accordance with this section.

1. Please explain why the structure specified in the applicable rule is not practicable (Env-Wt 101.69 defines practicable as “available and capable of being done after taking into consideration costs, existing technology, and logistics in light of overall project purposes”) (question 2, Attachment A, Minor and Major 20 Questions);

Bog Brook has a drainage area of 12.6 square miles which qualifies this stream as a Tier 3 Crossing. The required span based on the NH Stream Crossing Guidelines for a new crossing 54'-0". A structure of this size would typically cost approximately \$1,000,000. Spending this much money on a structure that could be adequately preserved for approximately \$250,000 would not be a practicable use of resources. There would be a significant increase in wetland impacts if a structure of this size were installed due to the additional footprint and for construction.

2. Please explain how the proposed alternative meets the specific design criteria for Tier 2 and Tier 3 crossings to the *maximum extent practicable*. Env-Wt 904.05 Design Criteria for Tier 2 and Tier 3 Stream Crossings – New Tier 2 stream crossings, replacement Tier 2 crossings that do not meet the requirements of Env-Wt 904.07, and new and replacement Tier 3 crossings shall be designed and constructed...

...In accordance with the NH Stream Crossing Guidelines:

The NH Stream Crossing Guidelines do not mention maintenance to a structure in a Tier 3 watershed.

The proposed structure will match the existing slope and alignment.

The bottom of the existing structure is currently a natural bottom and it will not be changed as a result of this project. The removal of the pier will help restore the channel to a more natural state.

Wildlife passage through the proposed structure will be no different than through the existing structure.

The proposed structure will maintain the flow depths found in the existing structure.

The proposed structure is expected to be able to pass the 100 year flood event.

...With bed forms and streambed characteristics necessary to cause water depths and velocities within the crossing structure at a variety of flows to be comparable to those found in the natural channel upstream and downstream of the stream crossing:

Water depths and velocities within the crossing at a variety of flows will be comparable to the existing depths and velocities. These flows are comparable to those found in the natural channel upstream and downstream of the stream crossing.

...To provide a vegetated bank on both sides of the watercourse to allow for wildlife passage:

It is not possible to provide vegetated banks on both sides of the watercourse below the roadway, regardless of the type of structure installed. Wildlife passage for the proposed structure will be the same as it is with the existing structure.

...To preserve the natural alignment and gradient of the stream channel, so as to accommodate natural flow regimes and the function of the natural floodplain (*questions 14 and 15, Attachment A, Minor and Major 20 Questions*);

**The natural alignment and gradient of the stream channel will not be altered as a result of this project. The structure can pass the 100 year storm event and this project will improve the capacity by removing the pier. The Fowler River sometimes floods but Bog Brook does not typically flood at this location.
Surface waters will not be reflected or redirected as a result of this project.**

...To accommodate the 100-year frequency flood and to ensure that there is no increase in flood stages on abutting properties (*questions 11 and 14, Attachment A, Minor and Major 20 Questions*):

**The deck replacement, pier removal and the riprap will not increase the potential of flooding. The structure can pass the 100 year storm event and this project will improve the capacity. The Fowler River sometimes floods but Bog Brook does not typically flood at this location.
The project as proposed will not alter the chance of flooding on abutting properties.**

...To simulate a natural stream channel:

Removing the pier will restore the channel to a more natural state. The riprap will silt in overtime and will match the natural channel.

...So as not to alter sediment transport competence (*question 14, Attachment A, Minor and Major 20 Questions*):

Nothing that will be a barrier to sediment transport will be installed in this project.

Env-Wt 904.09(c)(3) – The alternative design must meet the general design criteria specified in Env-Wt 904.01:

(a) Not be a barrier to sediment transport (*question 14, Attachment A, Minor and Major 20 Questions*);

Nothing that will be a barrier to sediment transport will be installed in this project.

(b) Prevent the restriction of high flows and maintain existing low flows (*question 14, Attachment A, Minor and Major 20 Questions*);

The structure rehab will not alter the existing high and low flows.

(c) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the water body beyond the actual duration of construction (*question 7, Attachment A, Minor and Major 20 Questions*);

The structure will provide the same degree of aquatic passage as the existing structure.

(d) Not cause an increase in the frequency of flooding or overtopping of banks (*question 14, Attachment A, Minor and Major 20 Questions*);

The structure rehab and the riprap will not increase the potential of flooding. The structure can pass the 100 year storm event and this project will improve the capacity by removing the pier. The Fowler River sometimes floods but Bog Brook does not typically flood at this location. The project as proposed will not alter the chance of flooding on abutting properties.

(e) Preserve watercourse connectivity where it currently exists (*question 15, Attachment A, Minor and Major 20 Questions*);

Connectivity will remain unchanged and will not be worsened with the proposed structure.

(f) Restore watercourse connectivity where...

...connectivity previously was disrupted as a result of human activity(ies) (*question 15, Attachment A, Minor and Major 20 Questions*);

Connectivity will remain unchanged and will not be worsened with the proposed structure.

...restoration of connectivity will benefit aquatic life upstream or downstream of the crossing (*question 15, Attachment A, Minor and Major 20 Questions*);

Aquatic life upstream and downstream will not be affected as a result of this project.

(g) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing (*question 14, Attachment A, Minor and Major 20 Questions*);

The riprap placed around the structure will prevent erosion and preserve the natural alignment and gradient of the stream channel. Removing the pier will help prevent erosion from taking place where the pier was.

Nothing that will be a barrier to sediment transport will be installed in this project.

(h) Not cause water quality degradation (*question 13, Attachment A, Minor and Major 20 Questions*).

The project as proposed will not impact the quantity or quality of surface and/or groundwater at this site. Best Management Practices will be used to prevent any adverse effect to water quality during construction.

PART Env-Wt 404 CRITERIA FOR SHORELINE STABILIZATION

The rehabilitation of the bridge that carries Fowler River Road over Bog Brook proposes the placement of stone fill within areas under the jurisdiction of the NH Wetlands Bureau and the US Army Corps of Engineers. The stone fill will be located in the channel and along the bank of the proposed structure as shown on the plans.

Pursuant to PART Wt 404 Criteria for Shoreline Stabilization, the following addresses each codified section of the Administrative Rules:

Wt 404.01 Least Intrusive Method

The riverbank stabilization treatment proposed is the least intrusive construction method necessary to minimize the disruption to the existing shorelines. The stone treatment can be reasonably constructed utilizing general highway construction methods.

Wt 404.02 Diversion of Water

Proposed roadway drainage will allow storm water run-off to be diverted so that it will flow over vegetated areas, insofar as possible, prior to entering Bog Brook. This will minimize erosion of the shoreline.

Wt 404.03 Vegetative Stabilization

Natural vegetation will be left undisturbed to the maximum extent possible. The only locations being disturbed are the impacted areas on the plan for construction. All newly developed slopes and disturbed areas will have humus and seed applied for turf establishment, which will help stabilize the project area.

Wt 404.04 Rip-Rap

- (a) Stone fill, as proposed, is shown on the attached plans to protect the channel and bank as necessary. Stable embankments are necessary to maintain the structural integrity of the bridge during all flow conditions.
- (b) (1-5) The minimum and maximum stone size, the gradation, cross sections of the stone fill, proposed location, and other details have been provided on the attached plans. Bedding for the stone fill will consist of natural ground excavated to the proposed underside of the stone fill.
- (b) (6) Enclosed are plan sheets to sufficiently indicate the relationship of the project to fixed points of reference, abutting properties, and features of the natural shoreline.
- (b) (7) Stone fill is recommended for the limits shown on the attached plans to protect the banks from erosion during flood flows, from scour during all flows, and slopes greater than 2:1 have difficulty supporting vegetation.
- (c) This project is not located adjacent to a great pond or water body where the state holds fee simple ownership.
- (d) Stone fill is proposed to extend down to and adequately keyed into the channel bottom to prevent possible undermining of the slope.
- (e) The enclosed plan has been stamped by a professional engineer.

Hydraulic Data

Drainage Area – 12.6 sq mi

Q 100 = 1690 cfs

Outlet Velocity = 6.13 fps at Q 100

At the 100 year flood, the proposed structure will pass all flow exiting the existing structure.

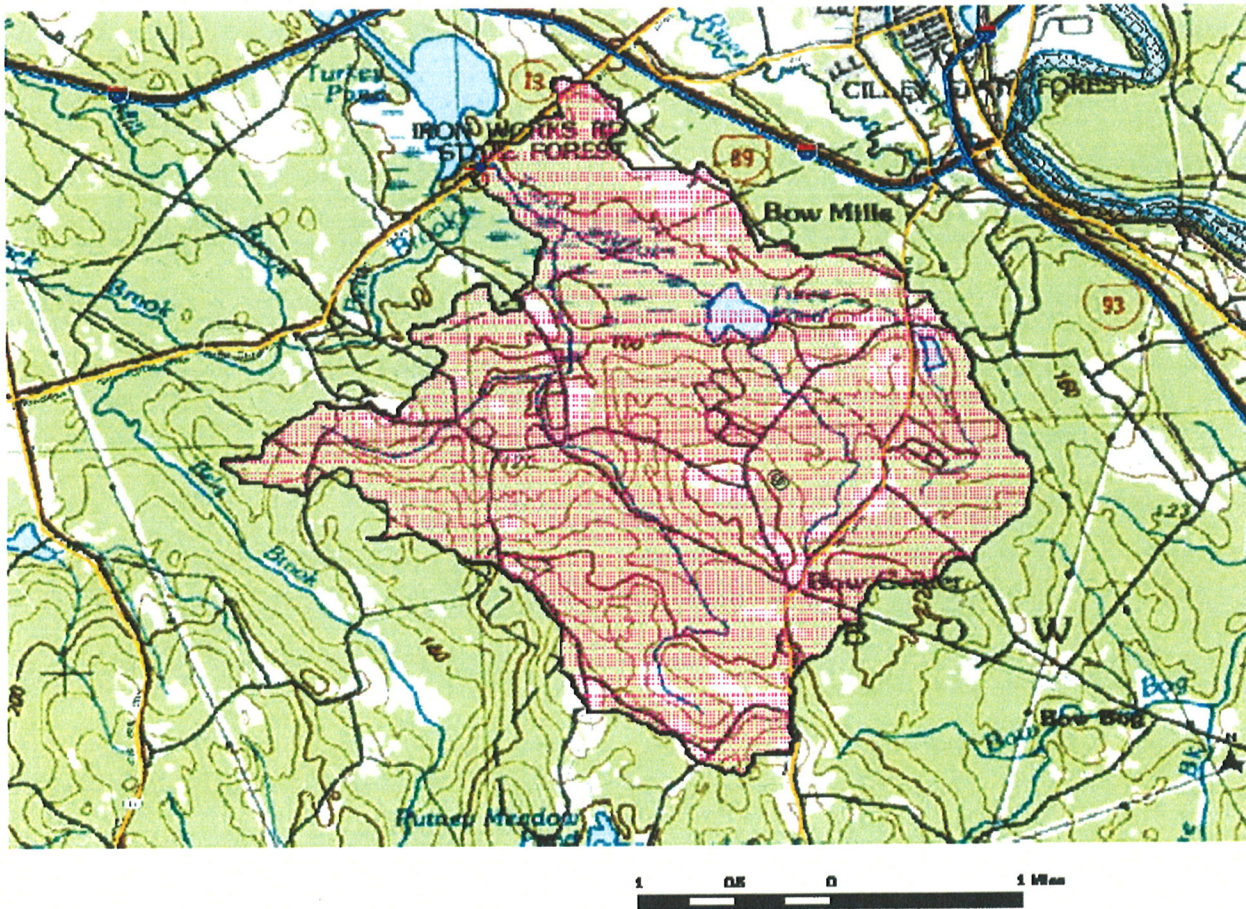


Figure 10: Watershed

Memo



NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Tony Weatherbee, New Hampshire Department of Transportation
7 Hazen Drive
Concord, NH 03302

From: Melissa Coppola, NH Natural Heritage Bureau

Date: 3/20/2015 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau

NHB File ID: NHB15-0902

Town: Alexandria

Location: Fowler River Road over Bog Brook

Description: Proposed work consists of replacing the concrete deck, removing the pier, widening the substructure, and placing riprap.

cc: Kim Tuttle

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

Vertebrate species

State¹ Federal Notes

Wood Turtle (*Glyptemys insculpta*)

SC

--

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.

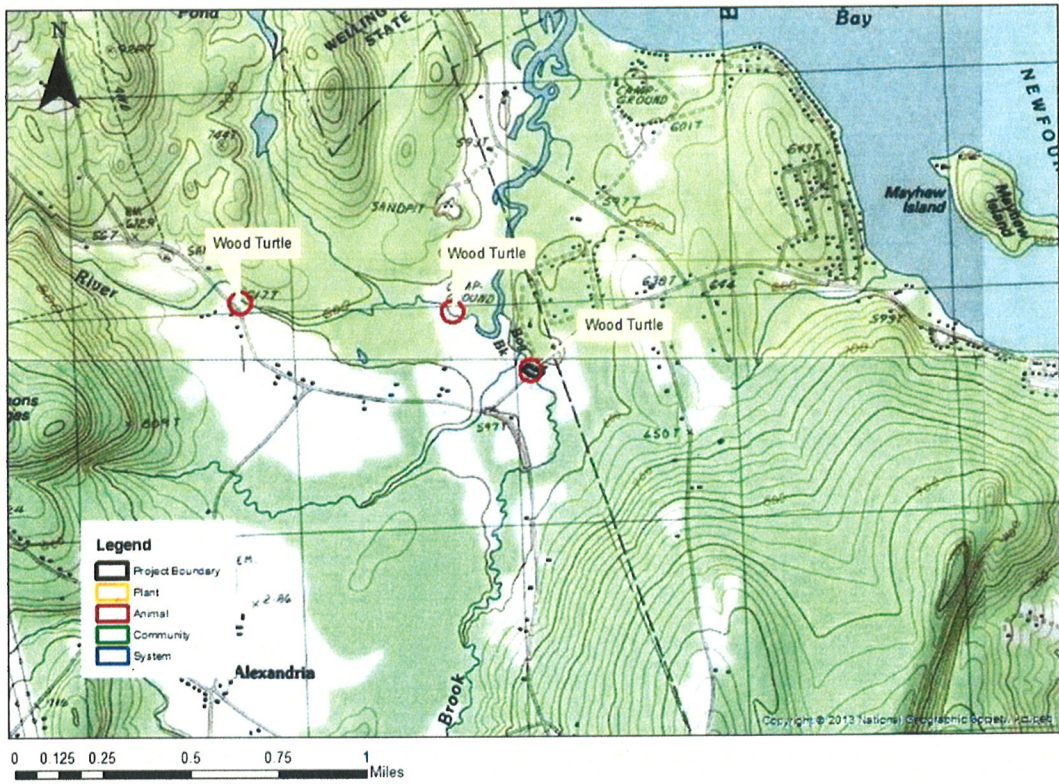
Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

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.

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

DRED/NHB
PO Box 1856
Concord NH 03302-1856

NHB15-0902



New Hampshire Natural Heritage Bureau - Animal Record

Wood Turtle (*Glyptemys insculpta*)**Legal Status**

Federal: Not listed
 State: Special Concern

Conservation Status

Global: Apparently secure but with cause for concern
 State: Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
 Comments on Rank:

Detailed Description: 2010: Area 12809: 1 adult male observed. 2009: Area 12830: 1 juvenile observed. Area 12831: 1 adult male observed.

General Area: 2010: Area 12809: Coniferous forest. 2009: Area 12830: Stream.

General Comments:

Management

Comments:

Location

Survey Site Name: Fowler River
 Managed By:

County: Grafton
 Town(s): Alexandria
 Size: 5.7 acres

Elevation:

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

Directions: 2010: Area 12809: 0.5 - .75 miles upriver from 202 Fowler River Road. 2009: Area 12830: In Bog Brook, a tributary of the Fowler River. Area 12831: In Fowler River, north of Bog Brook confluence.

Dates documented

First reported: 2009-08-20 Last reported: 2010-07-03

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.

Alexandria, non-federal, 40244

Tony Weatherbee provided an overview of the project. Rehab bridge that carries Fowler River Road over Bog Brook (174/146). The existing structure is a two span concrete slab bridge that has a two 13'-0" clear spans and 28'-0" deck width. Proposed work consists of replacing the concrete deck, removing the pier, widening the substructure, and placing riprap. The deck will be removed in two phases and the pier will be removed while the deck is off.

Carol Henderson asked if the pier will fully be removed and Tony said yes the pier will be fully removed, including the footing. Using natural material removed from where the structure will be widened to fill in the location where the pier was located was discussed.

Lori Sommer said that mitigation for the substructure widening is required and that some credit will be given for the pier removal. Matt Urban and Lori Sommer will coordinate the amount.

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

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

INSERT LINEAR FEET OF IMPACT on BOTH BANKS AND CHANNEL		
	Right Bank	8.00
	Left Bank	14.0000
	Channel	
	TOTAL IMPACT	22.0000
	Stream Impact Cost:	\$4,400.00
	DES Administrative cost:	
		\$880.00
***** TOTAL ARM FUND STREAM PAYMENT*****		
		\$5,280.00

Wetland Application – NHDOT Cultural Resources Review

For the purpose of compliance with regulations of the National Historic Preservation Act, the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the US Army Corps of Engineers' *Appendix C*, and/or state regulation RSA 227-C:9, *Directive for Cooperation in the Protection of Historic Resources*, the NHDOT Cultural Resources Program has reviewed the enclosed Standard Dredge and Fill Application for potential impacts to historic properties.

Above Ground Review

174/146 concrete slab - 1927

Known/approximate age of structure:

1927

- No Potential to Cause Effect/No Concerns *Because of the amount of reconstruction that was completed in the 1980s (maint. record attached) there are also multiple 2-span CS bridges, ensuring this is not a rare type.*
- Concerns:

Below Ground Review

Recorded Archaeological site: Yes No

Nearest Recorded Archaeological Site Name & Number: 27-GR-0213

Pre-Contact Post-Contact *Mill Site*

Distance from Project Area:

1.782 (2.868 Km) SW of project

- No Potential to Cause Effect/No Concerns *due to minimal impacts assoc'd with replacing concrete deck, pier removal, minor widening, placing prepreg*
- Concerns:

Reviewed by:

Sheela Ganes

12/3/2015

NHDOT Cultural Resources Staff

Date:



Figure 1: Fowler River Road over structure looking towards Bristol (10/2013).



Figure 2: Fowler River Road over structure looking towards Alexandria (10/2013).



Figure 3: NE side to be widened (10/2013).



Figure 4: NW side to be widened (10/2013).



Figure 5: Upstream (10/2014).



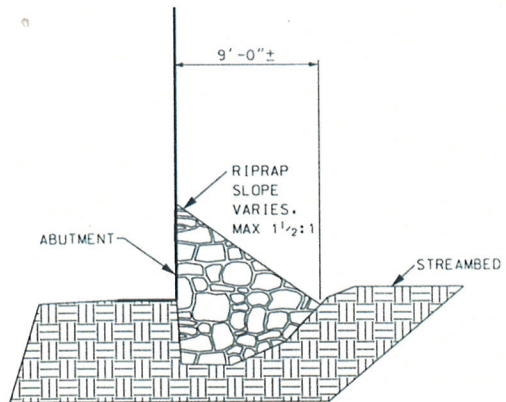
Figure 6: Downstream (10/2014).



Figure 7: Pier to be removed (10/2013).

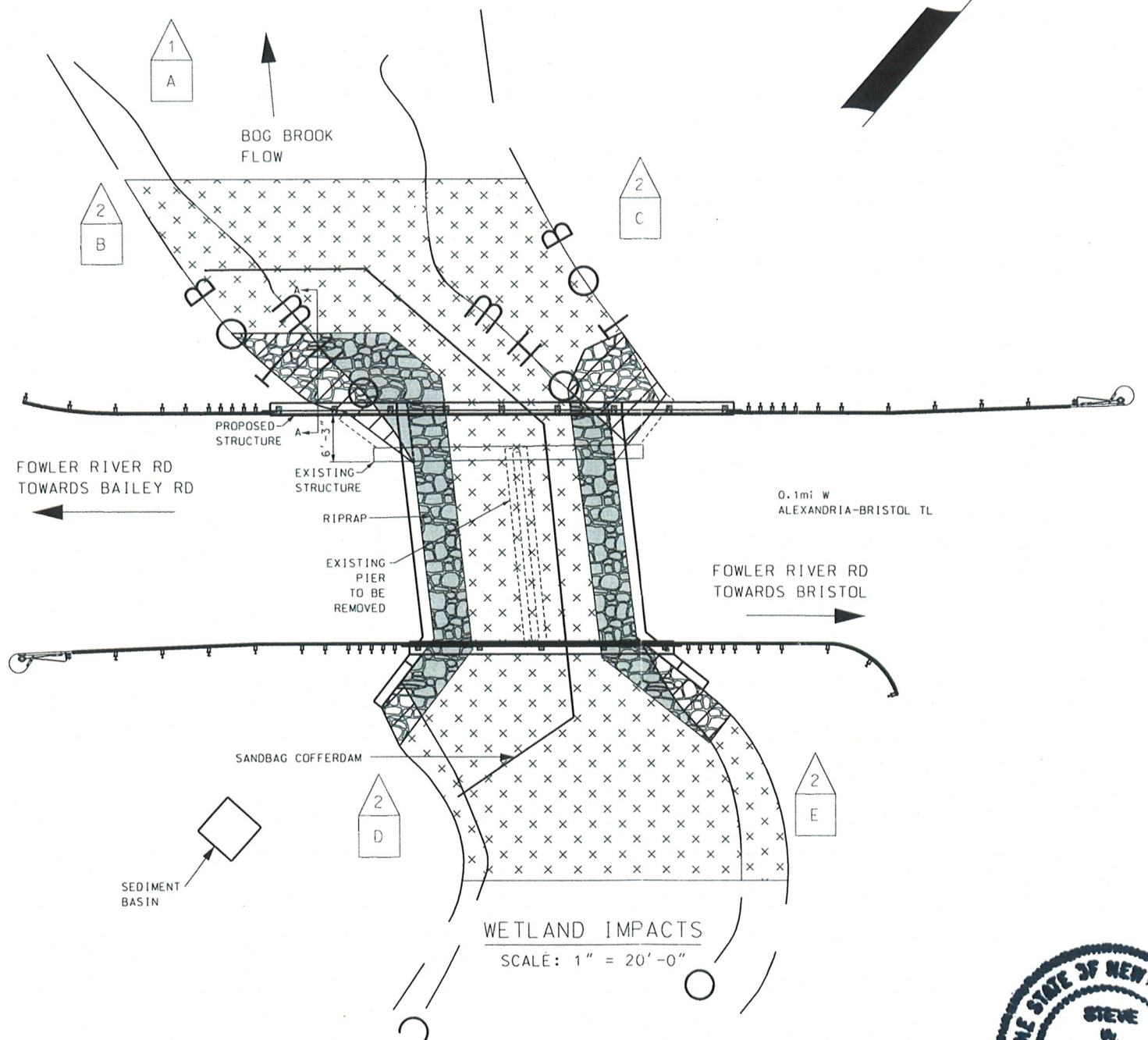


Figure 8: Elevation of structure (10/2014).



RIPRAP GRADATION
 D15 < 12"
 D50 < 20"
 D100 < 36"

SECTION A-A
 NOT TO SCALE



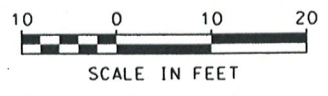
WETLAND IMPACT SUMMARY					
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA		
			PERMANENT IMPACTS		TEMPORARY IMPACTS
			N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.D.E. (WETLAND)	
1	R2UB1	A	SF	SF	SF
2	BANK	B	112	536	191
2	BANK	C	109		394
2	BANK	D	23		72
2	BANK	E	43		117
		F			
		G			
		H			
		I			

PERMANENT IMPACTS: 823 SF
 TEMPORARY IMPACTS: 3041 SF
 TOTAL IMPACTS: 3864 SF

WETLAND CLASSIFICATION CODES	
R2UB2	RIVERINE, LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, SAND
BANK	

LEGEND

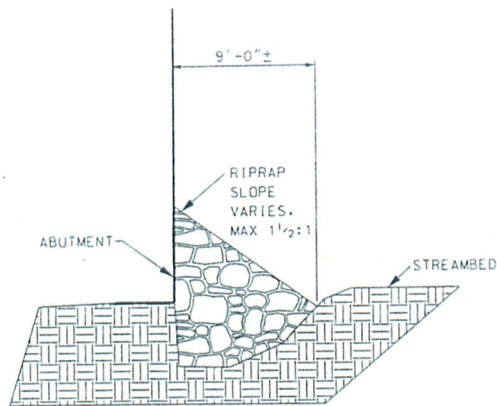
TYPE OF WETLAND IMPACT	SHADING/HATCHING	Symbol	Description
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	Diagonal hatching	#	WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	Solid shading	#	WETLAND IMPACT LOCATION
TEMPORARY IMPACTS	Grid pattern	#	WETLAND MITIGATION AREA
	Empty box		MITIGATION



WETLANDS DELINEATED BY MATT URBAN ON 11/2014

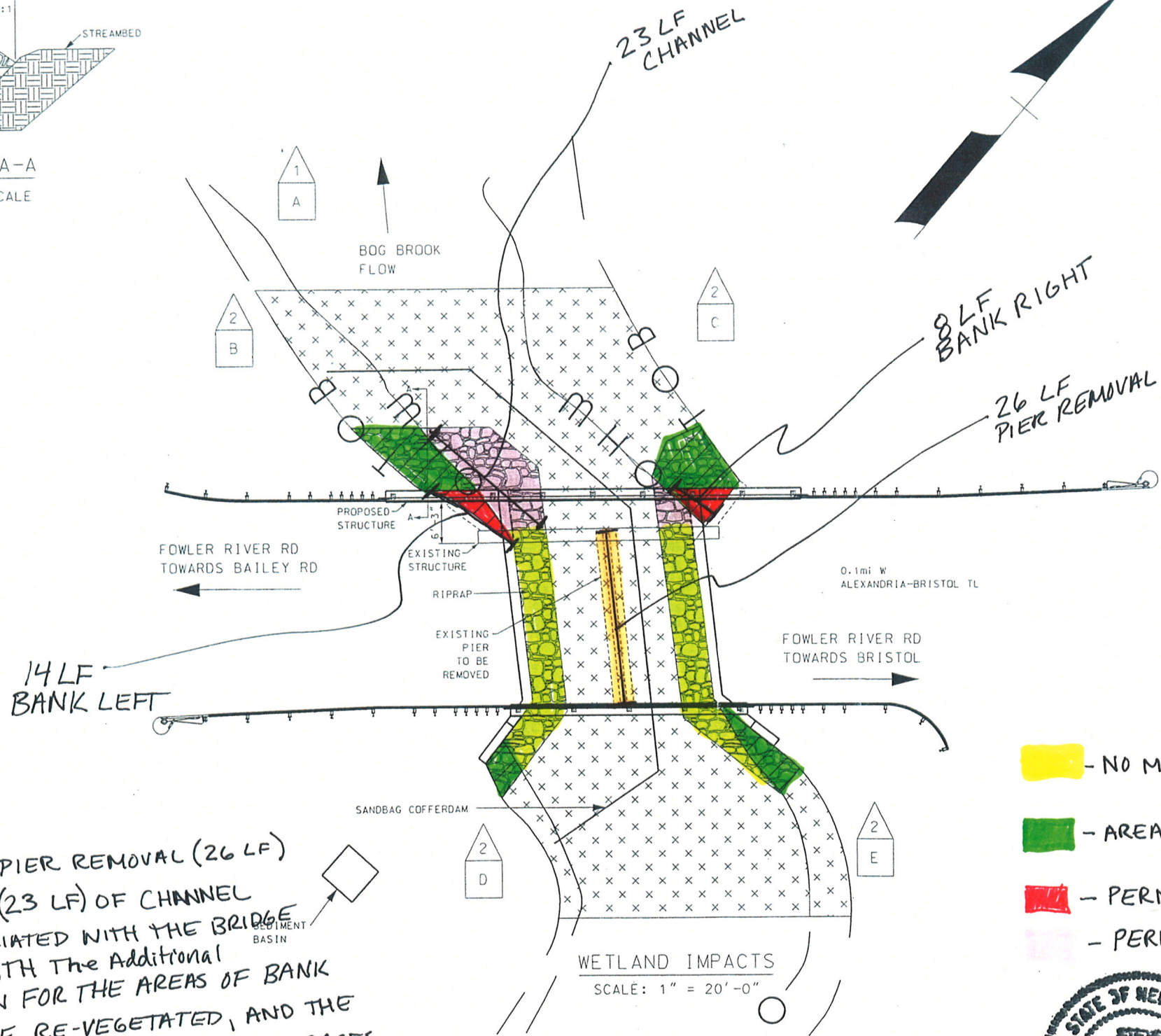
STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE									
TOWN	ALEXANDRIA	BRIDGE NO.	174/146	STATE PROJECT	40244				
LOCATION	FOWLER RIVER ROAD OVER BOG BROOK								
WETLAND IMPACTS									
REVISIONS AFTER PROPOSAL		BY	DATE	CHECKED	BY	DATE	BRIDGE SHEET		
		ANW	5/14/15		SWJ	11/30/15	1 OF 1		
		ANW	5/14/15		SWJ	11/30/15	FILE NUMBER		
							ALEXANDRIA		
							174/146		
ISSUE DATE		FISCAL YEAR	2015	CREW	03	SHEET NO	1	TOTAL SHEETS	1
REV. DATE									

SHEET SCALE
 AS NOTED

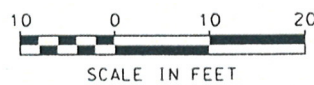


RIPRAP GRADATION
 D15 < 12"
 D50 < 20"
 D100 < 36"

SECTION A-A
 NOT TO SCALE



* NOTE:
 THE PROPOSED PIER REMOVAL (26 LF) NULLIFIES THE (23 LF) OF CHANNEL IMPACTS ASSOCIATED WITH THE BRIDGE WIDENING. WITH THE ADDITIONAL CREDITS GIVEN FOR THE AREAS OF BANK IMPACT TO BE RE-VEGETATED, AND THE REMAINING PORTION OF CHANNEL IMPACTS ASSOCIATED WITH THE PROTECTION OF THE EXISTING INFRASTRUCTURE, THE ONLY REMAINING IMPACTS THAT REQUIRE MITIGATION APPEAR TO BE THE AREAS OF PERMANENT BANK IMPACT THAT CAN NOT BE RESTORED DUE TO THE WIDENING. THESE IMPACTS ARE SHOWN IN RED.



WETLAND IMPACTS
 SCALE: 1" = 20'-0"

WETLAND IMPACT SUMMARY					
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA		TEMPORARY IMPACTS
			N.H.W.B. (NON-WETLAND)	N.H.W.B. & A.C.O.E. (WETLAND)	
1	R2UB1	A	SF	536	2267
2	BANK	B	112		191
2	BANK	C	109		394
2	BANK	D	23		72
2	BANK	E	43		117
		F			
		G			
		H			
		I			

PERMANENT IMPACTS: 823 SF
 TEMPORARY IMPACTS: 3041 SF
 TOTAL IMPACTS: 3864 SF

WETLAND CLASSIFICATION CODES	
R2UB2	RIVERINE, LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, SAND
BANK	

LEGEND

TYPE OF WETLAND IMPACT	SHADING/HATCHING	SYMBOL	DESCRIPTION
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	[Diagonal Hatching]	#	WETLAND DESIGNATION NUMBER
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	[Light Blue Shading]	#	WETLAND IMPACT LOCATION
TEMPORARY IMPACTS	[Cross-hatching]	#	WETLAND MITIGATION AREA
	[White Box]		MITIGATION

- NO MITIGATION (WOULD HAVE BEEN INSTALLED FOR PROTECTION OF EXISTING INFRASTRUCTURE REGARDLESS OF WIDENING)
- AREA OF SELF MITIGATING WHERE STREAM BANK VEGETATION WILL BE SALVAGED OR REPLANTED.
- PERMANENT BANK LEFT & BANK RIGHT IMPACTS REQUIRE MITIGATION.
- PERMANENT CHANNEL IMPACTS ASSOCIATED W/ WIDENING REQ. MITIGATION.
- MITIGATION CREDIT FOR CHANNEL IMPACTS ASSOCIATED W/ PIER REMOVAL. (26 LF)

WETLANDS DELINEATED BY MATT URBAN ON 11/2014



STATE OF NEW HAMPSHIRE									
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE									
TOWN	ALEXANDRIA	BRIDGE NO.	174/146	STATE PROJECT	40244				
LOCATION FOWLER RIVER ROAD OVER BOG BROOK						BRIDGE SHEET			
WETLAND IMPACTS						1 OF 1			
DESIGNED	ANW	5/14/15	CHECKED	SWJ	11/30/15	FILE NUMBER			
DRAWN	ANW	5/14/15	CHECKED	SWJ	11/30/15	ALEXANDRIA			
QUANTITIES						174/146			
ISSUE DATE			FISCAL YEAR	CREW	SHEET NO.	TOTAL SHEETS			
REV. DATE			2015	03	1	1			