STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: June 4, 2019

FROM: AMO Andrew O'Sullivan
Wetlands Program Manager

AT (OFFICE): Department of Transportation

Bureau of Environment

SUBJECT Dredge & Fill Application
Plainfield, 42580

TO Seta Detzel, Wetlands Permit Reviewer West Region
THRU Collis Adams, Wetlands Bureau Administrator
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Highway Design for the subject major impact project. This project is classified as major per Env-Wt 303.02(i). The project is located on NH Route 12A in the Town of Plainfield, NH. The proposed work consists of restoring and stabilizing approximately 400 feet of failed roadway embankment between NH Route 12A and the Connecticut River. Additional work includes installing underdrain along the east side of the road, replacing an 18" cmp and catch basin, as well as replacing guardrail.

This project was not reviewed at the Natural Resource Agency Coordination Meeting. The project team has met in person and has email coordination with the Department of Environmental Services regarding this project.

Mitigation is not required per Administrative Rule Env-Wt 302.03(c)(2)c.

The lead people to contact for this project are Tobey Reynolds, Project Manager, Bureau of Highway Design (271-2171 or Tobey.Reynolds@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 #570911) in the amount of $10,000 (NHDOT Fee Cap).

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:sel
Enclosures

cc:
BOE Original
Town of Plainfield (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 Joint Commission (via certified mail
Connecticut River Mt. Ascutney Local Advisory Committee (via certified mail)

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NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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: __ Day: __ Year: ____

☒ 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 12A, just north of the intersection with Beauty Hill Road**		TOWN/CITY: **Plainfield**	
TAX MAP: **NA**	BLOCK: **NA**	LOT: **NA**	UNIT: **NA**
USGS TOPO MAP WATERBODY NAME: **Connecticut River** ☐ NA		STREAM WATERSHED SIZE: ☐ NA	
LOCATION COORDINATES (If known): **43°35'27.19"N, 72°20'23.87"W**		☒ Latitude/Longitude ☐ UTM ☐ 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.

The project involves restoration and stabilization of approximately 400' of failed roadway embankment between NH Route 12A and the Connecticut River. Work includes clearing vegetation, constructing keyed stone fill into the river and up the slope, and reconstructing a portion of NH 12A. Areas for temporary access will need to be stabilized as well. Ancillary work includes installing underdrain along the east side of the road, as well as drainage and guardrail replacement.

5. SHORELINE FRONTAGE:

☒ N/A This does not have shoreline frontage. SHORELINE FRONTAGE: **598ft**

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	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Individual Sewerage Disposal per RSA 485-A:2	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Subdivision Approval Per RSA 485-A	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ DENIED
Shoreland Permit Per RSA 483-B	☐ YES ☒ NO	____	☐ APPROVED ☐ PENDING ☐ 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** - **1395** .

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.

8. APPLICANT INFORMATION (Desired permit holder)			
LAST NAME, FIRST NAME, M.I.: NH Department of Transportation			
TRUST / COMPANY NAME: NH Dept. of Transportation	MAILING ADDRESS: PO Box 483		
TOWN/CITY: Concord		STATE: NH	ZIP CODE: 03302
EMAIL or FAX: Tobey.Reynolds@dot.nh.gov	PHONE: 603-271-7421		
ELECTRONIC COMMUNICATION: By initialing here: TR, 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: NH Dept. of Transportation	MAILING ADDRESS: PO Box 483		
TOWN/CITY: Concord		STATE: NH	ZIP CODE: 03302
EMAIL or FAX: Andrew.O'Sullivan@dot.nh.gov	PHONE: 603-271-3226		
ELECTRONIC COMMUNICATION: By initialing here AO, I hereby authorize NHDES to communicate all matters relative to this application electronically.			

10. AUTHORIZED AGENT INFORMATION			
LAST NAME, FIRST NAME, M.I.:	COMPANY NAME:		
MAILING ADDRESS:			
TOWN/CITY:		STATE:	ZIP CODE:
EMAIL or FAX:	PHONE:		
ELECTRONIC COMMUNICATION: By initialing here _____, 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:

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 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.
8. I authorize NHDES 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 NHDES 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 NHDES correspondence. NHDES will not forward returned

Tobey Reynolds	Tobey Reynolds	6/3/2019
Property Owner Signature	Print name legibly	Date

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.

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.	TEMPORARY Sq. Ft. / Lin. Ft.
Forested wetland	☐ ATF	☐ ATF
Scrub-shrub wetland	☐ ATF	☐ ATF
Emergent wetland	☐ ATF	☐ ATF
Wet meadow	☐ ATF	☐ ATF
Intermittent stream channel	/ ☐ ATF	/ ☐ ATF
Perennial Stream / River channel	15780 / 462 ☐ ATF	9263 / 152 ☐ ATF
Lake / Pond	/ ☐ ATF	/ ☐ ATF
Bank - Intermittent stream	/ ☐ ATF	/ ☐ ATF
Bank - Perennial stream / River	24863 / 618 ☐ ATF	6204 / 36 ☐ ATF
Bank - Lake / Pond	/ ☐ ATF	/ ☐ ATF
Tidal water	/ ☐ ATF	/ ☐ ATF
Salt marsh	☐ ATF	☐ ATF
Sand dune	☐ ATF	☐ ATF
Prime wetland	☐ ATF	☐ ATF
Prime wetland buffer	☐ ATF	☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)	☐ ATF	☐ ATF
Previously-developed upland in TBZ	☐ ATF	☐ ATF
Docking - Lake / Pond	☐ ATF	☐ ATF
Docking - River	☐ ATF	☐ ATF
Docking - Tidal Water	☐ ATF	☐ ATF
Vernal Pool	☐ ATF	☐ ATF
TOTAL	40,643 / 1,080	15,467 / 188

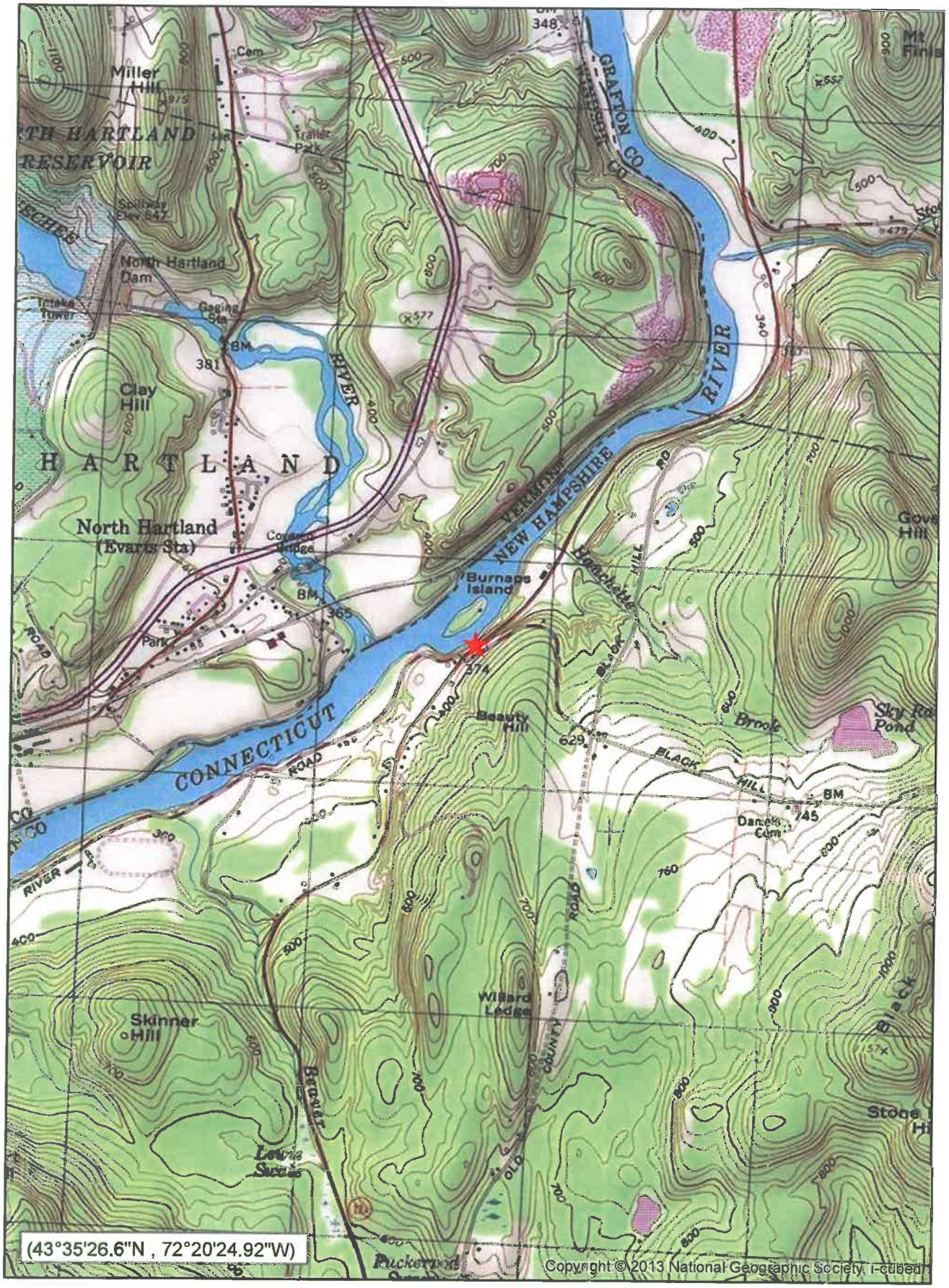
15. APPLICATION FEE: See the Instructions & Required Attachments document for further instruction

☐ Minimum Impact Fee: Flat fee of $ 200

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

Permanent and Temporary (non-docking)	**56,110** sq. ft.	X $0.20 =	$ **11,222**
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 =	$ **10,000**
The Application Fee is the above calculated Total or $200, whichever is greater =			$ **10,000**

Route 12A Plainfield Shoulder Washout



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 proposed project is to restore and repair approximately 300 feet of slope failure along the roadway embankment between the Connecticut River and NH Route 12A, which had occurred over time and was exacerbated by a significant rainfill event on April 21, 2019. The bank failure extended into the southbound lane of NH Route 12A, necessitating closure of that lane and reducing the roadway to one lane alternating two way traffic. Without repair, additional sloughing into the northbound lane is anticipated, and will likely result in full closure of the roadway.

Work includes clearing vegetation within the slope failure and adjacent to the failure, stabilizing the slope with stone fill keyed into the stream channel up to the top of bank, and reconstructing NH Route 12A. Humus and native seed is proposed over the stone fill from a point 2 feet above Ordinary High Water (OHW). *(see planting plan as well). Ancillary work includes installation of underdrain along the west side of NH Route 12A, in-kind replacement of one drainage structure and an 18" cmp outlet pipe (station 108), as well as guadrail replacement. Native vegetation will be planted within the restored bank as well as within the stabilized footprint of the access road. *(see planting plan).

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

See attachment "Wetland Permit Application Attachmet A Supplemental" for a description of the various alternatives considered.

The preferred and proposed alternative is alternative 3- Full Stone Lining.

Question 2:

Due to the encroachment of the slope failure into the southbound travel way of NH Route 12A, and the subsequent closure of the southbound lane, a no-build alternative was not considered feasible for this project.

Alternative 1 – NH Route 12A Relocation: Roadway relocation would require an expanded environmental review, substantial survey and additional right of way data collection, a complete conceptual alternatives analyses (to include the subsequent relocation of Beauty Hill Road), preliminary and final design, utility verification and relocation, extensive right-of-way acquisition, including public outreach, etc. The design process to complete the coordination and completion for relocation was estimated to take 12-24 months. As previously noted, traffic on NH Route 12A is operating on the northbound lane only as one lane, two way signal controlled operation, which is not ideal for winter travel or maintenance. Additionally, the existing slope failure continues to be monitored for further failure, and concerns relative to deformation in the remaining northbound lane. As a result of these concerns, the timeliness of the repair is considered paramount for the safety of the public.

Alternative 2 – Partial Stone Lining with Steep (1:1) Reinforced Soil Slope (RSS): This alternative proposed to reconstruct the slope perpetuating the current toe of slope within the failure area. This alternative stabilized the slope at a steep grade (1.0 - 1.2 to 1.0 (H:V)) using a combination of stone fill and reinforced soil slope to allow enough space to reconstruct NH Route 12A full width in its existing alignment. However, to access the toe and stabilize the slope, significant excavation of the existing stable in-situ embankment was necessary. The excavation of stable in-situ material was not considered ideal, and created the potential to destabilize a larger portion of the slope. The substantial earthwork required to facilitate this option would require closing NH Route 12A to maintain a safe excavation backslope for the temporary access road to the current toe of slope. NH Route 12A is a important link to agricultural businesses along the Conneticut River and the only detour that would accommodate truck traffic is via NH Route 120 which adds an additional 40 miles for trucks needing to access these businesses from the north. This was considered unacceptable by the Town Selectmen and the businesses.

Alternative 3 – Restoration 1.5:1 Slope Repair: This alternative focused on using the interpolated toe of slope from the slope characteristics north and south of the failure area. These adjacent sections implied that the natural toe of slope within the failure area previously existed further into the River than the current survey data implies. Using the interpolated toe, this option proposes a slight fill of stone into the river within the failure area in order to key the stone into the channel to prevent future undermining, and constructs a 1.5:1 (H:V) stone lined slope from the toe up to the top of bank, allowing enough space to reconstruct NH Route 12A full width in its existing alignment, similar to Alternative 1. By slightly filling into the river, this option greatly reduces the excavation of stable in-situ material. Although Alternative 3 creates greater immediate impacts to the Connecticut River, its considered to be a more reliable and sustainable approach long term.

3. The type and classification of the wetlands involved.

Jurisdictional wetlands that will be impacted by this project include the river bank to the Connecticut River, as well as the river channel itself.

Impacted wetlands: R2UB2 (Riverine, lower perennial, unconsolidated bottom, sand)

Bank

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

The wetland impacts are to the Connecticut River (channel and bank). No other nearby wetlands or surface waters are anticipated to be impacted by the proposed work.

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

The Connecticut River is listed as a designated river of NH due to its outstanding natural and cultural resources along the entire river cooridor. The Connecticut River however is not listed as a jurisdictionally rare wetland as it is a perennial stream which are common in New Hampshire. Through the environmental review process NHDOT has minimized impacts to the maximum extent practicable.

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

The proposed work will result in 15,467 square feet of temporary impact and 40,643 square feet of permanent impact to jurisdictional wetlands, including the following types of impacts:

Perennial Streams:

9,263 square feet of temporary impact and 15,780 square feet of permanent impacts to the river channel

6,204 square feet of temporary impact and 24,863 square feet of permanent impacts to the river bank

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.

New Hampshire Natural Heritage Bureau database search was completed (NHB19-1395, dated May 7, 2019) and results found no species were known to occur within the project area, although the following state listed plant species are known to occur on Burnaps Island adjacent to the project: Incurvered umbrella sedge (Cyperus squarrosus), Mudflat spikesedge (Eleocharis intermedia), Musky monkey-flower (Erythranthe moschata), Sandbar willow (Salix exigua spp. Interior). Correspondence with Amy Lamb at NHB found that based on the site survey conducted by Matt Urban on May 8, 2019 no species listed were known to occur onsite and the agency does not have further concerns for impacts from the project.

An official species list was requested and obtained from the USFWS on May 7, 2019 (Consultation Code 05E1NE00-2019-SLI-1631) using the Information for Planning and Conservation (IPaC) tool. The following Species were identified to may occur in the proposed project location: Northern Long-eared bat (Myotis septentrionalis) and Dwarf wedgemussel (Alasmidonata heterodon).

To further evaluate potential impacts to the Northern Long-eared bat the IPaC online review was submitted on May 9, 2019 to assist in determining whether the action is consistent with the January 5, 2016 Programmatic Biological Opinion (PBO). The results of the IPaC key found that the action is consistent with PBO and any take that may occur as a result of the action is not prohibited under the Endangered Species Act Section 4(d).

To address concerns for impacts to the Dwarf wedgemussel the Department reached out to the New England Field Office of the USFWS. E-mail coordination between Rebecca Martin and David Simmons (May 9-10, 2019) found that this stretch of the river had once supported the species, although no current occurrence information was available. It was recommended that DOT presume presence and avoid/minimize to the extent practicable, mainly preventing further siltation into the river.

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

As a result of the encroachment of the slope failure into the southbound lane of NH Route 12A and reduction of travel to one lane, alternating two way traffic operations, there is currently an impact to the public commerce, navigation and recreation. Based on public input that strongly opposed closing the roadway to facilitate other repair alternatives, which would have created a signficiant impact on public commerce (specifically the Riverbend Veterinary Clinic at the southwest corner of the intersection of NH Route 12A and Beauty Hill Road/River Road), the proposed project maintains one lane, two way traffic through the project area for the duration of construction. The final condition will stabilize the roadway embankment and reconstruct NH Route 12A to reestablish two way, two lane traffic. Stabilization of the embankment will help preserve the integrity of the slope, and safeguard public commerce, navigation and recreational opportunites.

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.

Due to the location of the project, some noticable changes will be apparent to the general public during and for a period after construction. Clearing and stone fill placement may be evident from NH Route 12A and the Connecticut River initially, but with the placement of humus and seeding of native grass on the stone fill above the OHW, as well as low growing landscape in areas outside of the stone fill, and in combination with the reestablishment of native vegetation over time, there will not be any overall change to the aesthetics of the 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 proposed project will not interfere with or obstruct public rights of passage or access. Access will be maintained along NH Route 12A during construction utilizing one lane, two way traffic, with the final condition reestablishing two lane, two way traffic conditions.

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 proposed work is limited to reestablishing the slope within the failure area, and providing for a gentle, natural, and stable tie in to the existing slopes north and south of the failure. Since erosion at the toe of slope has been determined as a significant factor in the slope failure, reconstruction and stabilization of the toe is anticipated to reduce the potential for future erosion/slope failures within this segment of embankment, which could include abutting properties. Temporary construction easements will be pursued for construction access. All disturbed areas will be permanently stabilized at the completion of the project.

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

NH Route 12A is currently operating under a one lane, two way operation, which creates a delay for roadway users through the slope failure area. The public expressed strong support to keep the road open, under one lane, two way operation, during the slope reconstruction, as well as for the immediacy of the repair. The proposed work will benefit the health, safety and well being of the general public by stablizing the slope, reconstructing NH Route 12A, and reopening the road for full access.

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.

This project focuses on reconstructing the slope failure area using an interpolated toe of slope based off survey data shown immediately north and south of the failure area. As a result, the project includes a slight fill of stone into the river within the failure area. However, the fill into the river and along the bank is not anticipated to result in a difference of water quantity or quality entering/existing the site. Furthermore, NH Route 12A will be reconstructed to its original width, and will not result in any increase or degradation of site runoff. The roadway is superelevated in this segment, which indicates the full width of the roadway discharges to the east side of the road. As a result, the existing ditchline will be reestablished along the east (uphill) side of the roadway to better convey stormwater into the drainage structure, which will be replaced with a new structure that includes a sump. Underdrain is also proposed beneath the ditch to help control the migration of water into the slope which will help prevent any future destabilization of the slope. Construction erosion control BMPs will be installed prior to construction and used throughout the restoration and repair work.

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

Hydraulic analyses via HEC-RAS is being completed to analyze if an increase or decrease in base flood elevation would occur due to the proposed slope work along the river. The proposed project is not expected to cause increased flooding, erosion, or sedimentation. Although the project proposes to fill into the river, its anticipated that the fill will reestablish the slope that was there prior to the gradual failure that happened over time. Appropriate temporary construction erosion control BMPs will be utilized as outlined in the attached Erosion Control Plans, to prevent erosion and sedimentation during construction activities.

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.

Not applicable, the proposed project will not reflect or redirect current or wave energy.

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 Connecticut River, its tributaries, associated wetlands and floodplains are quite extensive in and surrounding the project limits. It is unlikely that any cumulative impacts would result from other proposed permitted wetland impacts by abutters or adjacent property owners. Since most of the impacts take place within the floodplain of the Connecticut River, any additional proposed impact would be carefully reviewed and mitigated similar to this proposed project.

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

The functions and values of the Connecticut River are important for wildlife habitat including migrating fish and several rare and endangered species. Additionally, the Connecticut River is designated as an American Heritage River, National Blueway and part of the Silvio O. Conte National Fish and Wildlife Refuge. The surrounding tributaries and bordering wetlands provide similar habitats and buffering to the Connecticut River. This project is will not negatively impact the functions and values of the total wetland complex.

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 sites listed in the National Register of Natural Landmarks will be impacted by 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 Connecticut River was listed on the Nationwide Rivers Inventory in 1982. This project is not expected to impact the outstandingly remarkable values consisting of the historic, hydrologic, and botanic resources along the river.

Hydrologic: This section of the river is one of three remaining sparsely developed free-flowing segments of a unique high order river in this section.

Botanic: This segment of the river includes calcareous soils unique to this segment supporting rare plant species unusual to this section of the Connecticut River Valley.

Historic: This segment of the river includes the site of the first bridge over the Connecticut River, a toll bridge constructed in 1785 in Walpole.

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

This project is not anticipated to redirect water from one watershed to another.

Additional comments

7 c-f: NH NHB and USFWS did not indicate any species at the extremtieis of their ranges, migratory fish and wildlife, exemplary natural communtieis within the project area. No vernal pools were identified within the project area either.

Mitigation Narrative

Per Administrative Rule Env-Wt 302.03(c)(2)c mitigation is not required as the proposed bank restoration and stabilization "involves only riprap or other bank stabilization to protect existing infrastructure such as highways, bridges, dams, or buildings..."

This mitigation approach was discussed with Collis Adams on Thursday May 23rd.

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Arin Mills, NH Department of Transportation
John O. Morton Building
7 Hazen Drive
Concord, NH 03302-0483

From: Amy Lamb, NH Natural Heritage Bureau
Date: 5/7/2019 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB19-1395 Town: Plainfield Location: Tax Maps: 203-00004
Description: This project will include the emergency repair of a slope failure along the roadway embankment between the Connecticut River and NH Route 12A. Anticipated repair will include stone armoring the slope along the lower portion and constructing a reinforced soil slope in the upper portion. Work will also include construction of a temporary access road to allow equipment to access the steep bank between the road and river. Final plans are still under development, although it is anticipated 300-500' of bank will be impacted to stabilize the area from future erosion. Trees will be cleared as needed to install both the access road and bank stabilization material. Ancillary work includes guardrail and drainage installation.

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

Comments: Please send NHB photos of the site. We are especially interested in any photos taken along the shoreline. Please send a plan showing the limits of work within the Connecticut River.

Plant species	State[1]	Federal	Notes
incurved umbrella sedge (*Cyperus squarrosus*)	T	--	Changes to local hydrology, or recreational activities along the shoreline, could threaten this species, which occurs on river or streambanks..
mudflat spikesedge (*Eleocharis intermedia*)	E	--	
musky monkey-flower (*Erythranthe moschata*)	E	--	Threats to this species include loss of habitat and habitat degradation.
sandbar willow (*Salix exigua ssp. interior*)	E	--	

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

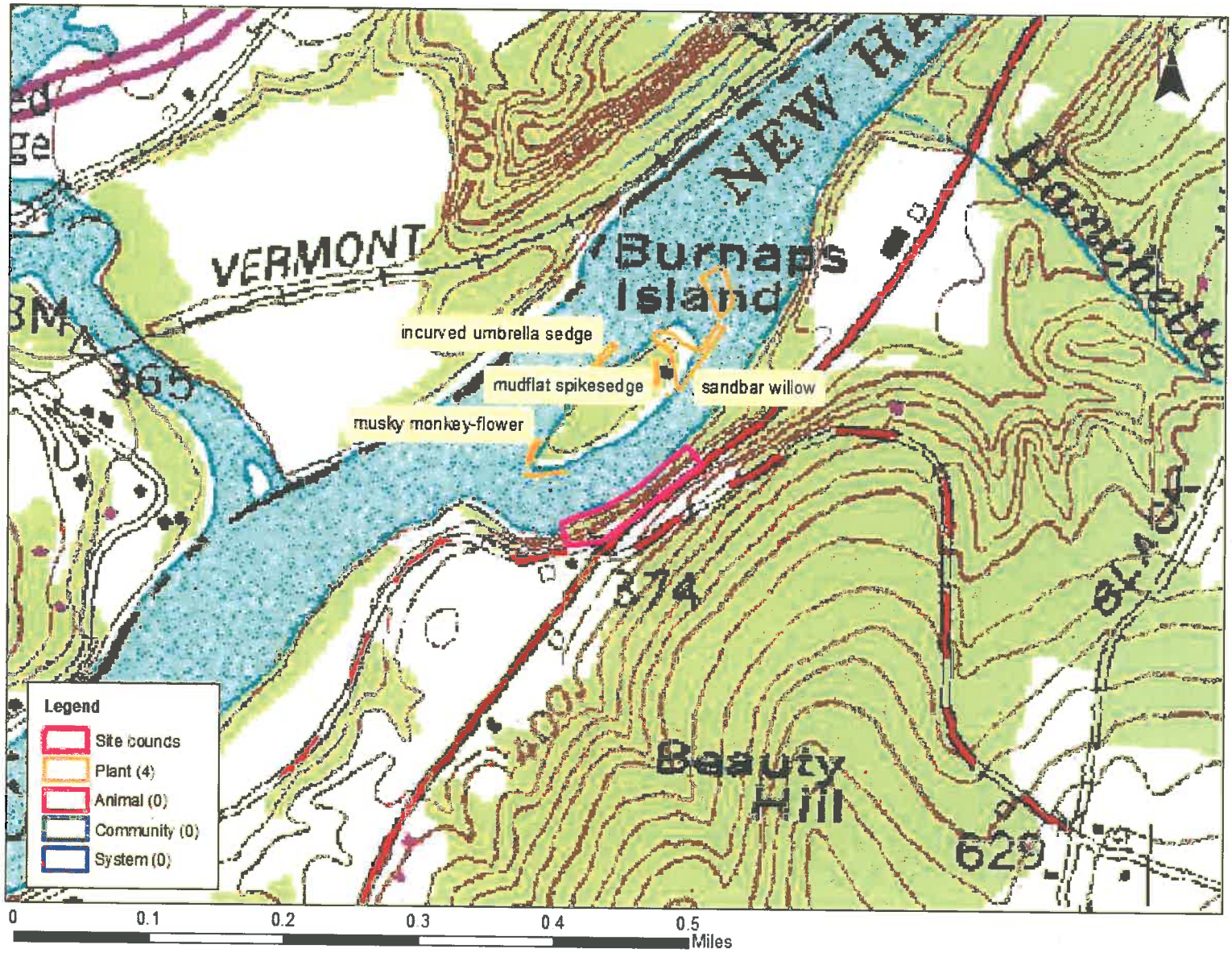
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed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

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

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB19-1395



Mills, Arin

From: Lamb, Amy
Sent: Friday, May 10, 2019 10:10 AM
To: Urban, Matt
Cc: Crickard, Ronald; Mills, Arin
Subject: RE: Plainfield 42580 (NHB19-1395)

Hi Matt,

Thanks for the information. I have no further comments.

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: Urban, Matt
Sent: Friday, May 10, 2019 6:56 AM
To: Lamb, Amy
Cc: Crickard, Ronald; Mills, Arin
Subject: RE: Plainfield 42580 (NHB19-1395)

Hi Amy,

Thanks for getting back to me.

The undercutting that had occurred does seem like it was localized to the area of failure and did not appear to extend upstream or downstream . My assessment from what I saw in the field and from reviewing aerial imagery is that the undercutting occurred because the point of failure was the focal point on the inside bend of the bank that gets hit when the river is running at flood stage levels and deflecting off the island being directed to the banks.

We have chosen the current typical and materials that gives us the most confidence that we will not cause more erosion upstream and downstream of the fix. The last thing we want to do is cause the banks to unravel because then we would be chasing the issue and it too costly to do so.

The tree cutting to the south east would consist of just cutting the trees and leaving the stumps while maintaining existing veg.

I will relay your planting grass recommendations to the design team to see if we can specify any of these in the contract.

If possible please try and relay your final thoughts today so we are able to proceed appropriately.

Thanks,
Matt

From: Lamb, Amy
Sent: Thursday, May 9, 2019 3:09 PM
To: Urban, Matt
Cc: Crickard, Ronald; Mills, Arin
Subject: RE: Plainfield 42580 (NHB19-1395)

Matt,

Thanks for the response.

Does the undercutting that's apparently causing the slope failure stop at the clearing limit? My concern is that hardening the bank may direct velocities further down the slope, where River Road is also very close to the riverbank. However, if this area is more or less stable currently, perhaps this is not a concern at present.

Where the clearing limit extends beyond the cut slope area (southeast of the cut slope), will trees be stumped and the slope remain the same? Or will the trees just be cut with the intention of maintaining the vegetation in an open state?

In terms of planting, if it is not possible to plant shrubs then I would recommend utilizing grasses with substantial fibrous root systems to help stabilize the soils on the slope. soils. Recommended common native species include little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), and switch panicgrass (*Panicum virgatum*).

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: Urban, Matt
Sent: Thursday, May 09, 2019 2:35 PM
To: Lamb, Amy
Cc: Crickard, Ronald; Mills, Arin
Subject: RE: Plainfield 42580 (NHB19-1395)

HI Amy,

I did walk the entire length and the species I was seeing are what I listed below. I didn't notice any seepages the slopes were surprisingly dry. I originally thought the failures might have been associated with a seep but upon inspection of the slopes they didn't appear to be seeps. I suspect the failures were a result of the bank being undercut by the velocity of the river and then the whole slope sloughing down.

The reason for the additional tree clearing is twofold. The first reason is that it's required to be able to install the access road *(which is the white hatching you see).

The second reason is that the trees are pulling down on the compromised banks so the intent behind cutting is to alleviate the stress/gravity pulling on the banks that may cause areas upstream and downstream to give way as well. We see it as a preventative measure in hopes of not having to extend the length of the rip-rap repair area.

The Blue area is the section of class A rip-rap. And the green area is the section of soil stabilization wraps.

The yellows is the area of pavement to be repaved.

The green line is the tree clearing zones.

The orange line is irrelevant it was a relic from when we were looking at possibly moving the road.

As for a planting plan....I have not had a chance to discuss this with the design and construction folks but it was going to be the recommendation of DES from our field visit to revegetate the access road area with eastern hemlock and red oaks which were the native dominant species in that area.

The reinforced soils above the rip-rap will be humus and seeded. We cannot proposed plantings on this section because it could compromise the stabilization technique so it will be limited to grass.

I hope this helps enable you to render a response from your agency that will enable us to keep moving forward.

Please note that I have cc'd Ron Crickard and Arin Mills because I will be on vacation after this Friday.
Please cc' both of them on your response so that we are sure someone receives it in the event that I am out.

Thanks,
Matt

From: Lamb, Amy
Sent: Thursday, May 9, 2019 11:17 AM
To: Urban, Matt
Subject: RE: Plainfield 42580 (NHB19-1395)

Hi Matt,

Thanks for sending the plan and photos. I have a few follow-up questions for you. Is there a legend or anything that you could send to clarify the symbology on the plan? I think that the white is the access road, and the blue is two different types of riprap, but can you confirm? Finally, what is the reason for the additional clearing 100'+ downriver from the stabilization area?

Considering the habitat for each of these species, there appears to be limited sandbar habitat along the bank where stabilization will occur. However one of the plants, musky monkey-flower, often occurs in seeps. I was wondering, did you walk the entire length of the work area (NHB letter says 300-500'), and if so, did you notice any areas of seepage?

Lastly, I was wondering if I could review the planting plan for the upper portion of the slope.

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: Urban, Matt
Sent: Thursday, May 09, 2019 7:58 AM
To: Lamb, Amy
Subject: RE: Plainfield 42580 (NHB19-1395)

Following up with the preliminary plan showing limits of work as indicated below.
Matt

From: Urban, Matt
Sent: Thursday, May 9, 2019 7:57 AM
To: Lamb, Amy
Subject: Plainfield 42580 (NHB19-1395)
Importance: High

Hi Amy,

Thanks for the NHB review.

I went out to the site yesterday with DES to do a site inspection.
We went to the lower edge of the river to look for any of the listed species.
I took some photos too (see attached).
I didn't see anything that stood out to me.
I saw lots of Eastern Hemlock, Striped Maple, buckthorn, some fern sprouts, some equisetum, and lots of poison ivy.

I saw no sedges (incurved umbrella sedge), no Musky Monkey Flower (I assumed they wouldn't have been flowering but I didn't see anything with similar leaf structure either.) I didn't see any Mudflat Spikesedge and no sandbar willow. (I took a close up of the shrub in the area and I am pretty sure it was all buckthorn.)

As requested in the NHB I will be following up with a preliminary plan showing the extent of work along the Connecticut River. (size too big to include with this email with all the photos.)

I hope this helps.
If you have no concerns can you let us know ASAP.
I am trying to have all of our coordination complete by Friday so that the design teams can include all of our findings with the prosecution of work for the contractors to bid.

Thanks,
Matt

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:
Consultation Code: 05E1NE00-2019-SLI-1631
Event Code: 05E1NE00-2019-E-03960
Project Name: Plainfield Washout- 42580

May 07, 2019

Subject: 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: 05E1NE00-2019-SLI-1631

Event Code: 05E1NE00-2019-E-03960

Project Name: Plainfield Washout- 42580

Project Type: TRANSPORTATION

Project Description: This project will include the emergency repair of a slope failure along the roadway embankment between the Connecticut River and NH Route 12A. Anticipated repair will include stone armoring the slope along the lower portion and constructing a reinforced soil slope in the upper portion. Work will also include construction of a temporary access road to allow equipment to access the steep bank between the road and river. Final plans are still under development, although it is anticipated 300-500' of bank will be impacted to stabilize the area from future erosion. Tree will be cleared as needed to install both the access road and bank stabilization material. Ancillary work includes guardrail and drainage installation.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.59073399662928N72.3404566822409W

Counties: Sullivan, NH

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

---

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

Mammals

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

Clams

NAME	STATUS
Dwarf Wedgemussel *Alasmidonta heterodon* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/784	Endangered

Critical habitats

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

United States Department of the Interior

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

In Reply Refer To:
Consultation Code: 05E1NE00-2019-TA-1631
Event Code: 05E1NE00-2019-E-04031
Project Name: Plainfield Washout- 42580

May 09, 2019

Subject: Verification letter for the 'Plainfield Washout- 42580' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Arin Mills:

The U.S. Fish and Wildlife Service (Service) received on May 09, 2019 your effects determination for the 'Plainfield Washout- 42580' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Dwarf Wedgemussel, *Alasmidonta heterodon* (Endangered)

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Plainfield Washout- 42580

2. Description

The following description was provided for the project 'Plainfield Washout- 42580':

> This project will include the emergency repair of a slope failure along the roadway embankment between the Connecticut River and NH Route 12A. Anticipated repair will include stone armoring the slope along the lower portion and constructing a reinforced soil slope in the upper portion. Work will also include construction of a temporary access road to allow equipment to access the steep bank between the road and river. Final plans are still under development, although it is anticipated 300-500' of bank will be impacted to stabilize the area from future erosion. Tree will be cleared as needed to install both the access road and bank stabilization material. Ancillary work includes guardrail and drainage installation.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.59073399662928N72.3404566822409W

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR

§17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered

   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   Yes

8. Will the action only remove hazardous trees for the protection of human life or property?

   No

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

    No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

1.3

2. If known, estimated acres of forest conversion from April 1 to October 31

1.3

3. If known, estimated acres of forest conversion from June 1 to July 31

1.3

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?
0

Large, Sarah

From: David Simmons <david_simmons@fws.gov>
Sent: Friday, May 10, 2019 9:17 AM
To: Martin, Rebecca
Cc: Mills, Arin; Crickard, Ronald
Subject: RE: [EXTERNAL] Plainfield Route 12A Closure and Dwarf Wedgemussel, DOT Project 42580

Hi Rebecca,
The site is within a stretch of the River that has supported DWM in the past, but we don't have recent occurrence information on the immediate project area. I recommend DOT assume presence and avoid/minimize to the extent practicable. Sounds like you are planning on doing that already. We can handle consultation after the emergency repairs. Another species to consider is the cobblestone tiger beetle, which, if our info is correct, occurs in the cobble bar/island across from the project area. No ESA consultation needed for this species, but it is rare, so we'd recommend DOT avoid/minimize impacts to the cobble bar as well. I'd be happy to meet on the phone or in person if you want to discuss in detail. Have a great weekend! Best,
David
~~~~~~

David Simmons
Supervisor, Endangered Species & FERC/Hydro Programs
U.S. Fish and Wildlife Service, New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301
603.227.6425
~~~~~~

From: Martin, Rebecca <Rebecca.Martin@dot.nh.gov>
Sent: Thursday, May 09, 2019 1:22 PM
To: 'David Simmons' <david_simmons@fws.gov>
Cc: Mills, Arin <Arin.Mills@dot.nh.gov>; Crickard, Ronald <Ronald.Crickard@dot.nh.gov>
Subject: [EXTERNAL] Plainfield Route 12A Closure and Dwarf Wedgemussel, DOT Project 42580
Hello David,
I am back from maternity leave this week and trying to slowly wade back in to things here at DOT. I hope your spring is going well and that there have not been any lasting effects on your office from the shutdown. A pressing situation in Plainfield was brought to my attention this morning and I am hoping that you might be able to assist or refer me to someone who can help. A portion of NH Route 12A had to be closed due to a slope failure at the end of April (location: -72.340727 , 43.590550 Decimal Degrees). Details about the situation are below. We are hoping to learn soon if FHWA will be assisting with funding the emergency repair. The IPaC search included the Dwarf Wedgemussel, but our NHB report did not. My colleague, Arin Mills, is working on the environmental review for the project and shared with me that when she visited the site there was still flooding and she was not able to ascertain if the habitat might be appropriate for the Dwarf Wedgemussel. I have attached the IPaC search (which includes a link to google maps: https://www.google.com/maps/place/43.59073399662928N72.3404566822409W) and a couple of photos. I was wondering if anyone in your office might have information about DWM presence/absence in this section of the River? Also, is there an emergency informal consultation procedure in our region? My understanding is that erosion is continuing at the site and without a prompt repair there could be a more significant failure with more sediment and road materials entering the River. Best management practices would be employed during construction to protect water quality and once the area is stabilized the erosion is anticipated to stop. We would hope to complete consultation quite quickly to avoid further road loss and erosion.
DOT has been monitoring the site and designing an emergency repair. There has been continued erosion and noticeable migration of the failing slope, leading folks here to believe the slope has not yet found it's equilibrium which is an

ongoing safety concern as it may continue to fail. My understanding is that the edge of the road has continued to collapse as the bank continues to fail as a result of the storm surge and rise and fall of the Connecticut River along with sheet flow. There is currently alternating one way traffic, but more of the roadway seems to be at risk. The plan for construction of the repair is still being developed, but will include stabilization of approximately 300 feet of failed roadway embankment between NH Route 12A and the Connecticut River, located just north of the intersection of NH Route 12A and Beauty Hill Road/River Road in Plainfield. Work proposed includes clearing vegetation, excavating for temporary access to the base of the embankment, constructing keyed stone fill into the river and along the lower portion of the slope and installing a reinforced soil slope in the upper portion. A portion of NH Route 12A will need to be reconstructed as a result of anticipated temporary access. Ancillary work includes drainage and guardrail replacement. There may need to temporarily be fill in the Connecticut River to allow equipment access to complete the work.
We would appreciate hearing any guidance or recommendations you might offer.
Thank you,

Rebecca Martin
Senior Environmental Manager
NH DOT Bureau of Environment
7 Hazen Drive
Concord, NH 03302
(603)271-6781
Rebecca.Martin@dot.nh.gov

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: (Desktop or Field Review Date)	5/13/2019		
Project Name:	Plainfield		
State Number:	42580	**FHWA Number:**	To be assigned
Environmental Contact:	Arin Mills	**DOT**	
Email Address:	Arin.Mills@dot.nh.gov	**Project Manager:**	Tobey Reynolds

Project Description: The project involves stabilization of approximately 300 feet of failed roadway embankment between NH Route 12A and the Connecticut River, located just north of the intersection of NH Route 12A and Beauty Hill Road/River Road in Plainfield. Work includes clearing vegetation, excavating for temporary access to the base of the embankment, constructing keyed stone fill into the river and along the lower portion of the slope and installing a reinforced soil slope (RSS) in the upper portion. A portion of NH Route 12A will need to be reconstructed as a result of anticipated temporary access. Ancillary work includes drainage and guardrail replacement.

Please select the applicable activity/activities:

Highway and Roadway Improvements	
☐	1. Modernization and general highway maintenance **that may require additional highway right-of-way or easement**, including: Choose an item. Choose an item.
☐	2. Installation of rumble strips or rumble stripes
☐	3. Installation or replacement of pole-mounted signs
☒	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
☒	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
☐	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
☐	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, **that may require minor additional right-of-way or easement**, including: Choose an item. Choose an item.
☐	8. Historic bridge maintenance activities within the limits of existing right-of-way, including: Choose an item. Choose an item.
☒	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	
☐	10. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons
☐	11. Installation of bicycle racks
☐	12. Recreational trail construction
☐	13. Recreational trail maintenance when done on existing alignment
☐	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Railroad Improvements	
☐	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or highway right-of-way, **provided no historic railroad features are impacted,** including, but not limited to: Choose an item. Choose an item.
☐	16. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old)
☐	17. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted
Other Improvements	
☐	18. Installation of Intelligent Transportation Systems
☐	19. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements where no construction will occur
☐	20. Rehabilitation or replacement of existing storm drains.
☐	21. Maintenance of stormwater treatment features and related infrastructure

Please describe how this project is applicable under Appendix B of the Programmatic Agreement.

The proposed project activities include placement of riprap and other erosion control measures to prevent further erosion of waterway banks. Use of a large rip-rap base will be constructed 10 feet above the existing water level and a reinforced soil slope backfilled with stone will be constructed above to serve as a filter/drainage layer and reconstruct the eroded slope. Ancillary work will also include in-kind guardrail and drainage pipe replacement as well as tree removal for access of equipment. These activities comply with undertakings of Appendix B Certification for Projects with minimal Potential to Cause Effects. The proposed projects are within the existing State ROW and negotiated temporary/permanent easements. Removal of Pavement resurfacing and marking/striping fall within Appendix A, Activities with no Potential to Cause Effect.

Please submit this Certification Form along with the Transportation RPR, including photographs, USGS maps, design plans and as-built plans, if available, for review. Note: The RPR can be waived for in-house projects, please consult Cultural Resources Program Staff.

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	N/A
Please identify public outreach effort contacts; method of outreach and date:	NHDHR has reviewed the proposed impacts for archaeological concerns and concurred with Department's assessment that the proposed area is not archaeologically sensitive. See Cultural Resources Review attached (signed 5/8/2019). A town meeting was held 5/15/2019, the Selectboard and citizens were informed of the proposed plans. Abutting landowners were sent letters informing them of the project. Additional outreach efforts have included the Conservation Commission, and Local Advisory Commission.		

Finding: (To be filled out by NHDOT Cultural Resources Staff)

☒	**No Potential to Cause Effects**	☐	**No Historic Properties Affected**
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
☐	**This project does *not* comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.**		
	NHDOT comments:		

Appendix B Certification – Activities with Minimal Potential to Cause Effects

NHDOT Cultural Resources Staff	5/16/2019 Date

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption a project is limited to the activities listed in Appendix B until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Every project shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the New Hampshire State Historic Preservation Office, the Army Corps of Engineers, New England District, the Advisory Council on Historic Preservation, and the New Hampshire Department of Transportation Regarding the Federal Aid Highway Program in New Hampshire*. In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

If any portion of the project is not entirely limited to any one or a combination of the activities specified in Appendix B (with, or without the inclusion of any activities listed in Appendix A), please continue discussions with NHDOT Cultural Resources staff.

This No Potential to Cause Effect or No Historic Properties Affected project determination is your Section 106 finding, as defined in the Programmatic Agreement.

Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.

Project Plainfield 42580 NH RT 12A Washout Emergency (43°35'26.6"N , 72°20'24.92"W)

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 proposed project for potential impacts to historic properties.

PROJECT PROPOSAL: Emergency proposed action and authorization for repairs of a District 2 edge of road collapse and slope failure in Plainfield (Sullivan County) is needed and fast tracking is requested for contracting the project as it will require a 40-50 minute detour. The road and slope failure is located along a 300 Linear feet segment on NH Route 12 A along the Connecticut River bank where the edge of the road collapsed and continues to erode and migrate as a result of the storm surge, sheet flow coming off the road, and the rise and fall of the Connecticut River. Sand bags have been temporarily established and the traffic has been limited to alternating one way. Closing the roadway completely is anticipated during the construction, which is anticipated to take approximately 7-9 weeks.

The following is specific project description detail:
The proposed emergency solution will consist of constructing what we call a Reinforced Soil Stabilization (RSS) slope. ***(We anticipate having a sketch of the cross section early next week for you.)*** *This will consist of constructing a large rip-rap base that will be constructed to a height of 10 feet above the existing water level (estimated at elevation 315 using lidar), or 1 foot above the check flood level (Q500), whichever is the highest elevation, using Class A Stone Fill. The riverside side slope of the berm will be graded from 1.25H:1V to 1.5H:1V as conditions permit. The base will be used as a working platform as the stone is placed from upstream to downstream across the failure area. From the top of the stone base we will begin constructing a reinforced soil slope by placing a 1.5-foot-thick lift which is comprised of 3/4 inch stone completely wrapped in a medium strength non-woven geotextile. The toe of this initial lift of material should be located 2 to 3 feet from the crest of the stone base below to form a narrow "shelf". This lift will serve as a filter/drainage layer to the slope face for any groundwater seepage above. We will place a sheet of geogrid on top of the filter/drainage layer followed by an 18-inch-thick layer of Crushed Gravel, Granular Backfill Bridge, or other backfill material (to be decided). The surficial end of the geogrid will extend 6 inches from the slope face to provide a purchase point for cover material. The tail end should extend to the location shown on the cross section (to be decided). To contain the exposed end of the backfill layer it should be wrapped with a medium strength, non-woven geotextile with a minimum top and bottom embedment length of 5 feet (roll widths are usually 12 feet). We will repeat the grid/geotextile/backfill placement up the slope to the pavement structure subgrade (bottom of Sand course). The embankment should be reconstructed to a 1.25H:1V slope, but could be graded to a slightly steeper slope if necessary. The surficial face of each lift would be wrapped with non-woven geotextile to prevent erosion. Loam & Seed will be added to the embankment surface to protect the geogrid/geotextile from UV damage. Erosion control matting will be used to reinforce the topsoil against sloughing and surface erosion on the steep slope. It may be necessary to forego this surficial treatment in areas where the slope is too steep. In these areas, this treatment could be replaced by a 2-foot-thick layer of Class B Stone Fill (no separating geotextile necessary). The Class B treatment would begin at the shelf and extend as high as necessary but should not be applied above loamed & seeded areas. (This will need to be a field determination).*

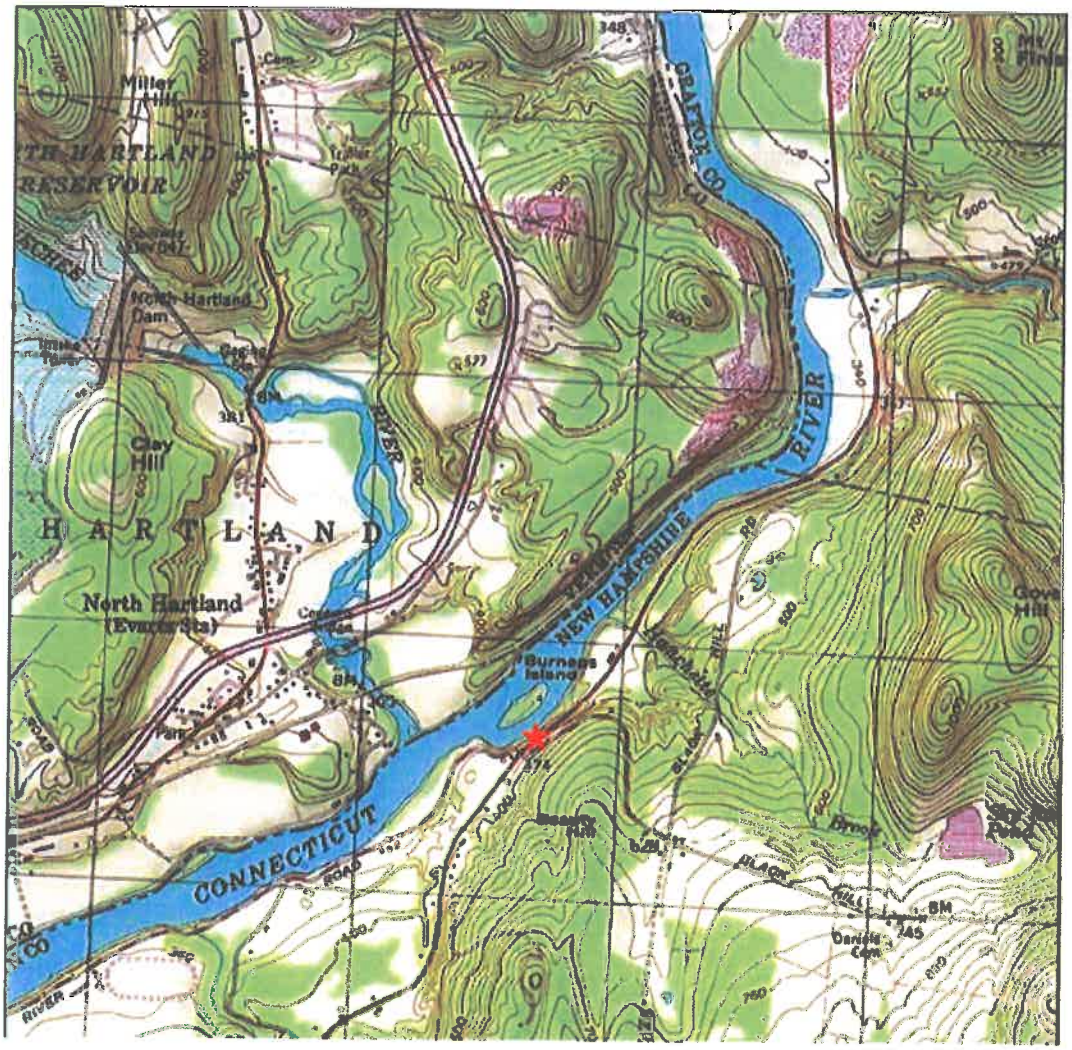
The estimated length of this slope reconstruction will be approximately 300' long from end to end at the top of the road and about 150' long at the toe of the slope. (this is a result of the required haul road to reach the bottom. All the trees in the immediate area of slope reconstruction on the sloughing bank will be completely removed to allow the reconstruction to occur.

We also would like to propose an additional length of tree cutting, leaving the stumps in place, approximately 125 feet upstream and downstream of the slope reconstruction measured from the top of the road/stabilization in an effort to take additional weight and stress off of the banks surrounding the constructed slope.

We will construct a haul road to access the failure area. The haul road will begin at the north end of the project in the northbound lane, extend diagonally across the southbound lane to the toe of the slope. Side slopes will be graded to 1.5H:1V. At this grade the side slope is expected to extend across the full width of the roadway for most of the failure area.

Erosion controls will be installed prior to any work and managed throughout the construction process. We intend to deploy a large silt boom in the river to control water quality issues while placing the Class-A stone base.

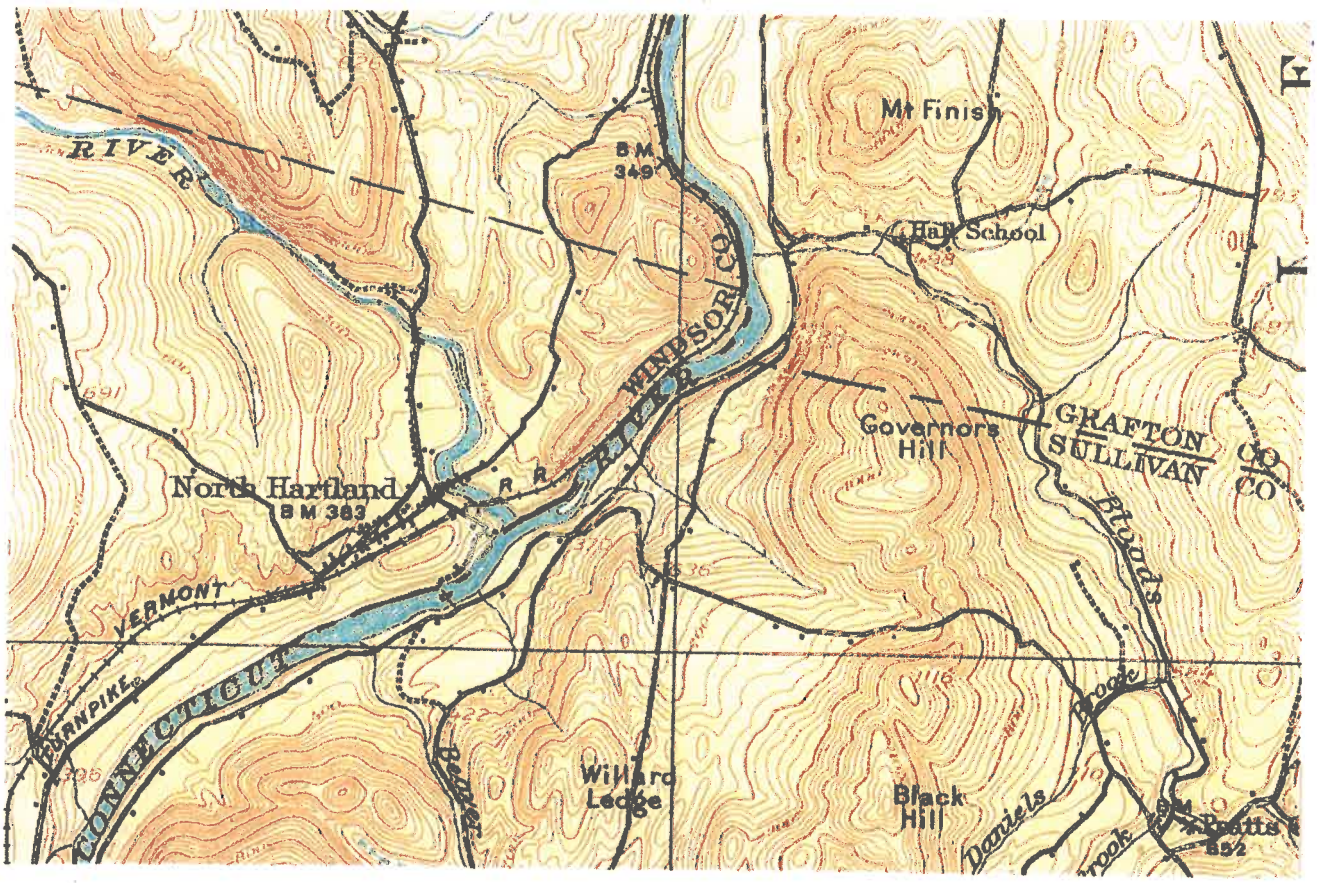
Route 12A Plainfield Shoulder Washout



Route 12A Plainfield Shoulder Washout

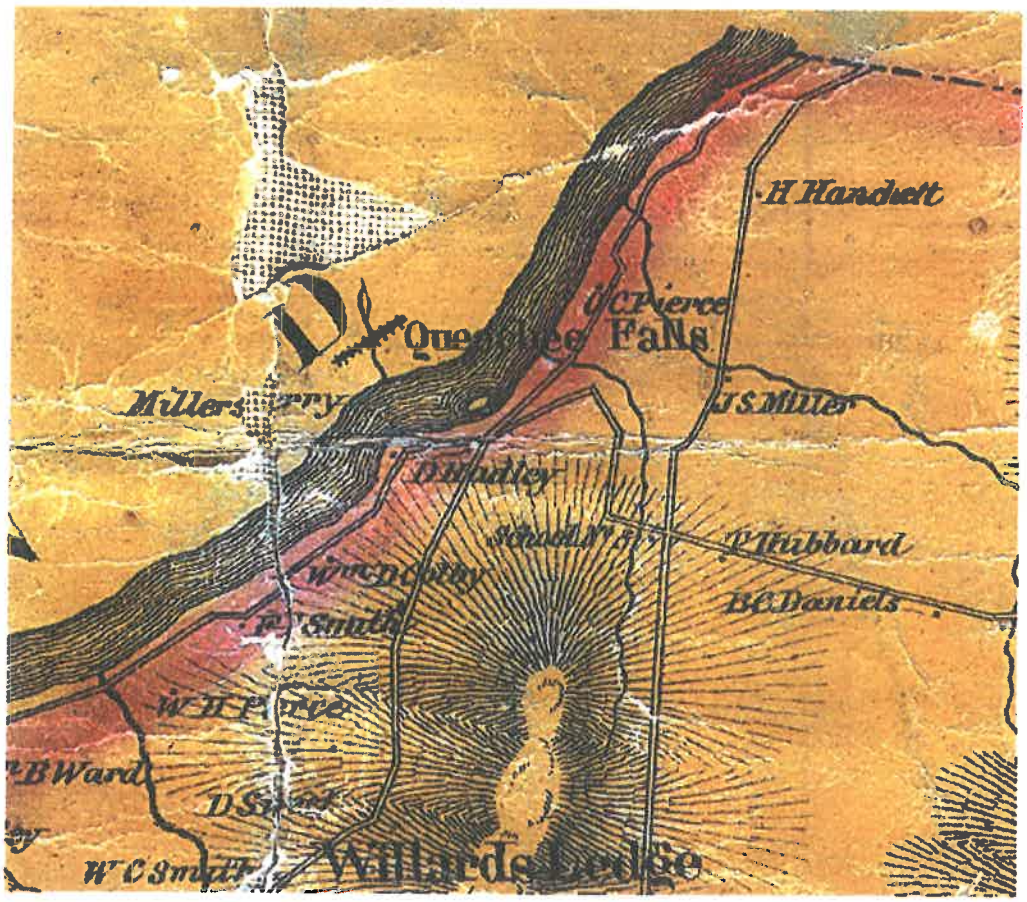
Project____Plainfield 42580 NH RT 12A Washout Emergency (43°35'26.6"N , 72°20'24.92"W)

1906 USGS Hanover 15' Topographic Quadrangle



1892 Hurd Map of Plainfield

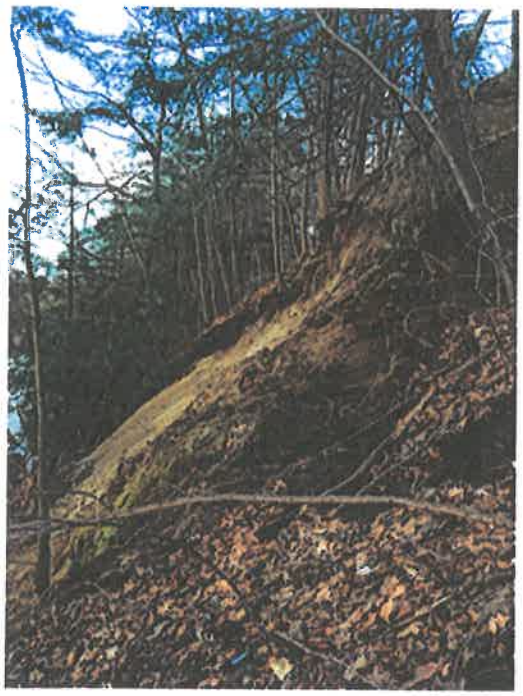
1860 H.P. Walling Map of Plainfield

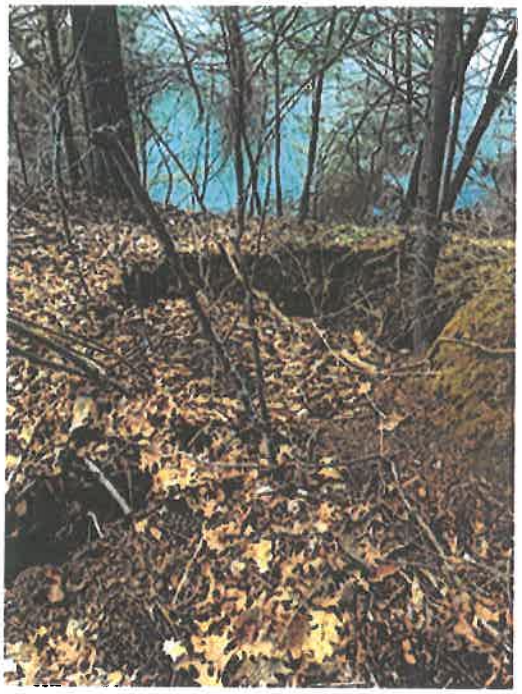


Photographs taken on 5/6/2019

Shoulder Washout Along NH Route 12A; shoulder erosion, loss of pavement, and guardrail instability

Project____Plainfield 42580 NH RT 12A Washout Emergency _(43°35'26.6"N , 72°20'24.92"W)





Connecticut River Bank Erosion

Above Ground Review

Known/approximate age of structures:
No standing structures in project area

☒ **No Potential to Cause Effect/No Concerns**
EMMIT search (5/7/2019) did not disclose any historic & Project Area or Historic Properties in APE.

☐ Concerns:

Below Ground Review

Recorded Archaeological site: ☐Yes ☒No

Nearest Recorded Archaeological Site Name & Number: 27-SU-0031 E. Colby Farm Site
☒Pre-Contact ☐Post-Contact

Site form (1952) prepared by Howard Sargent and site was discussed in Daniel Cassedy's senior thesis (UNH 1980:14, 34). Precontact site, unknown period. Artifact collection, presumed collected/held by Earl Colby c.1952 and Lockwood Sprague c.1988 in barnyard of E. Colby farm. Site described as "cache" that included a blade.

Site form's USGS topo map has a sidebar annotation that refers to VT –2 People's Farm, N. Hartland

Distance from Project Area: (within .5 mile buffer)
2317 ft (706 meters) northeast of project area

☒ **No Potential to Cause Effect/No Concerns**
☐ Concerns

The project area setting lies east of Burnaps Island within the Connecticut River and the junction of the Ottauquechee River with the Connecticut River. As such, this location appears to represent a setting that may have been attractive for Pre-Contact activities. Most likely, the location has not been investigated for archaeological resources, especially in the deep seated contexts along the Connecticut River.

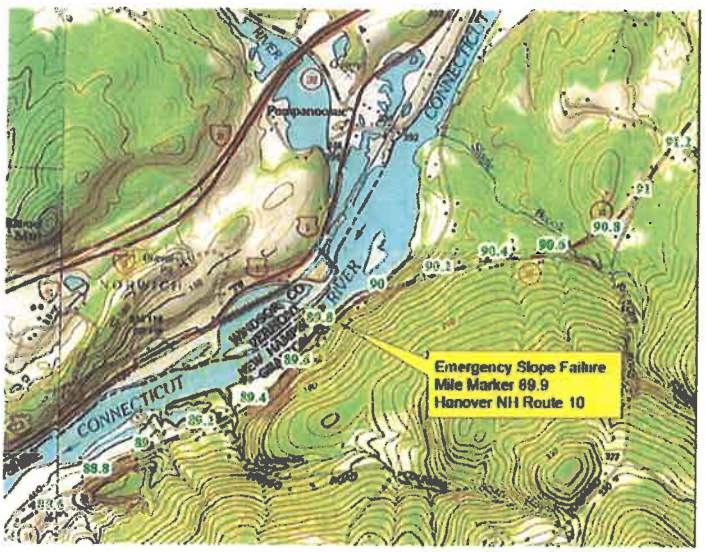
EMMIT and Terrain Navigator archaeological site locational database research was undertaken and the proposed project corridor was reviewed to determine if known archaeological sites have been identified, there are none. However, within the .5 mile buffer (2317 ft/706 meters) southwest of the project area, the E. Colby Farm Site is located.

However the difficulty lies in that the terrain and soils in this area are very unstable and have already experienced sheer sloughing. The project is focused on approximately 300 linear feet along the bank, where the slope is very steep, approximately 1ft X 1ft. The proposed haul road will be established within this project corridor which has already had substantive impacts.

Field review was conducted by NHDOT Bureau of Environment Operations Management Section Chief Matt Urban, NHDOT Bureau of Environment Operations Management Environmental Manager Arin Mills, and NHDOT District 2 Engineer Doug King on April 24 and 25, 2019, who did not identify any artifacts or cultural features along the exposed steep bank, which includes scattered patches of poison ivy.

Comparative Project Review

A similar slope failure situation on Route 10 (Mile Marker 89.8) in Hanover was jointly reviewed on 6/21/2017 by NHDOT Cultural Resources staff and NHDHR Archaeologist Edna Feighner.



The following is a summary of the results of the Site Visit and Cultural Review:

Matt Urban notified me of a slope failure in Hanover on Route 10 (Lyme Rd at Mile Marker 89.8) at the top of bank of the Connecticut River. Proposed actions to stabilize the area include benching, constructing a rip-rap embankment, and adding fill to stop the erosion before it gets to the road.

However, as the slope failure has exposed a substantive stratigraphic column and this setting is on the Connecticut River near where the Connecticut and Pompanoosuc River converge, it clearly warranted a site visit to determine its potential and if the slope failure has exposed any artifacts.

A field visit was undertaken on Wednesday June 21, 2017 by NHDOT Cultural Resources Specialist Sheila Charles, NHDOT Cultural Resources Assistant Karen Malburne, and NHDHR Archaeologist Edna Feighner to make a determination of archaeological site sensitivity. The site visit revealed a dense field of poison ivy, but no artifacts or cultural features in this approximately 15 feet wide by 20 feet deep slope failure that continues to descend to the Connecticut River waterside.

We have no concerns for cultural resources and there is no need for an archaeologist to be on site to monitor stabilization during construction in August.

Sheila Charles
Cultural Resources Program Specialist
Bureau of Environment

Conclusion

Due to the steep unstable slope, and that field review by environmental managers did not reveal evidence of cultural resources, there are no cultural resource program concerns with the proposed stabilization measures.

If access for the proposed activities changes or expands, additional review by the Cultural Resources Program staff will be needed.

Compiled by Sheila Charles

Reviewed by: Sheila Charles

Sheila Charles 5/8/2019

NHDOT Cultural Resources Specialist/Archaeologist Date:

David Scott - DVR 5/8/19

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?		N/A
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)	X	
2.5 The overall project site is more than 40 acres?		X
2.6 What is the area of the previously filled wetlands?	N/A	
2.7 What is the area of the proposed fill in wetlands?	81,158 s.f	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?		
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index		X

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.		
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?		N/A
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	X	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		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.

1.1: Work is defined as being with an area identified as within 'One Mile Buffer on No Additional Loading AUID's'
2.1: Work is within the Connecticut River and adjacent bank. Proposed work will repair destabilized slope.
2.4: Proposed work will install stone fill to restore river bank and prevent future erosion of the river bank. Proposed work will use 'Class A?' stone rip-rap on lower portion with a soil and vegetated slope overlaid on the upper portion. Due to the steepness of the slope and material naturally lost stone is needed to stabilize and prevent future scouring and erosion, leading to roadway infrastructure loss.
3.1: A NHB review was conducted and found that although state listed plant species are known in the area, no species are known to occur in the project area. Coordination with USFWS found the activities are consistent with the 4(d) rule for the Northern long-eared bat. Coordination with the USFS New England Field Office found that although Dwarf wedgemussel have historically been documented in the area follow-up coordination could be conducted after the emergency repair and to avoid/minimize impacts during repair.
3.2: The project location is identified as 'Highest Ranked Habitat in NH' . This is likely due to the proximity to the Connecticut River. The proposed project will protect the waterway from continued and adjacent bank from further destabilization.
4.1: The project is within the 100-year floodplain as identified by FEMA. As the proposed project will restore the river bank to the natural location no loss of flood storage is anticipated and compensatory mitigation is not required.
5: Coodination with DHR was conducted and determined the proposed project would result in 'No Potential to Cause Effects'

PLAINFIELD Slope Failure, #42580

Photo 1 : Looking North along Route 12A at site of failure (April 24, 2019)

Photo 2: Looking South along 12A at site of failure (April 24, 2019)

Photo 3: Looking South at bottom of slope failure along Connecticut River (May 8, 2019)

Photo 4: Looking North at bottom of slope failure along Connecticut River (May 8, 2019)

Photo 5: Looking Northeast up-slope at failure (May 8, 2019)

Photo 6: Looking Southeast up-slope at failure (May 8, 2019)

CONSTRUCTION SEQUENCE

- Flag or fence clearing and grubbing limits, clearly distinguish areas for clearing (no grubbing).
- Install all necessary perimeter controls (turbidity barrier, silt fence, construction fence) at the construction limits, including areas of disturbance, clearing and grubbing, etc., for all work areas prior to any clearing and/or earthwork activities.
- Install storm drain inlet protection for all catch basins and drainage structures within and adjacent to the work areas.
- Set up construction staging areas for equipment, material and soil storage within the delineated work areas.
- Cut trees within the designated clearing/clearing and grubbing areas and remove the trees. Remove all vegetation, including roots, within designated clearing and grubbing areas only.
- Construct temporary access to the toe of the slope, including a stabilized construction entrance along NH Route 12A.
- Install the stone fill, keying into the toe of the slope and extend up the slope as shown on the plans.
- Install landscaping and final slope stabilization. See planting plan within plan set.
- Reconstruct NH Route 12A, including underdrain installation and ditch work along the east side of NH Route 12A.
- Replace the existing catch basin and 18" cmp outlet pipe; Install guardrail.
- Install all final stabilization.

May 20, 2019

PLAINFIELD
Non-Federal
42580

PART Wt 404 CRITERIA FOR SHORELINE STABILIZATION

Proposed improvements include stone fill within and along the banks of the Connecticut River. The locations of proposed stone fill are shown on the attached 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 proposed stabilization treatment includes construction of a 1.5:1 (H:V) armored slope. The stone will extend the full length of the slope, and is critical to provide resistance to erosive forces at the toe, as well as provide a constructible and durable finished slope. Humus will be placed on top of the stone starting at approximately 2 feet above the ordinary high water, and will extend up to the top of the slope. Native grass and plantings will be incorporated into the slope to restore to a natural appearance.

Wt 404.02 Diversion of Water

Permanent drainage improvements are limited to the replacement of one structure and outlet, which will be replaced in the same location to discharge onto the proposed stone fill area of the slope. During construction, water that ordinarily flows through this pipe, as well as any water collected in the ditch line on the uphill side of NH Route 12A will be collected and managed using typical diversion and erosion control measures. Water will be diverted from the work area during stone fill placed within the Connecticut River through installation of a turbidity barrier.

Wt 404.03 Vegetative Stabilization

(a) Natural vegetation will be left undisturbed to the maximum extent possible. Vegetative cover, including humus, grass and native landscape, is proposed to cover the stone fill 2 feet above ordinary high water.
(b) N/A

Wt 404.04 Rip-Rap

(a) Stone fill, as proposed throughout the project, is shown on the attached plans to stabilize and protect the embankment against erosion and scour, and maintain the structural integrity of the roadway.

(b) (1-5) - The enclosed Section 583, specification for Riprap VII (Item 583.7) and 585 specification for Stone Fill, Class A (Item 585.1) provides the description of the material size, gradation, and construction requirements for each respective material. Cross sections of the stone fill showing proposed thickness and other details have been provided on the attached plans. Bedding for the stone fill will consist of either:

- Natural ground excavated to the proposed underside of the stone fill with geotextile, or
- Newly constructed embankments consisting of suitable excavated material in conformance with Section 203 of the Specifications.

(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) - The lower portion of the slope is consistently exposed to significant flows and velocities, and has shown a pattern of scour of the in-situ soil over time. Stone fill is necessary to protect against the scour that regularly occurs, and to support the slope/roadway above.

(c) N/A

(d) Stone fill is recommended for the limits shown on the enclosed plans to protect the Connecticut River and its banks from erosion during flood flows and from scour during all flows.

(e) Engineering plans are being provided as a part of the wetland application for rip-rap in excess of 100 linear feet along the stream banks within the project limits.

SECTION 583 -- RIPRAP

Description

1.1 This work shall consist of furnishing and placing riprap as shown on the plans or ordered. Riprap is typically required for erosion protection of bridge structures in waterways, for active waterway channel slopes and bottoms, and for intermittent waterway channels where the Engineer determines riprap protection is required to resist expected high water flow velocities.

Materials

2.1 Riprap shall be quarry stone of approved quality, hard, durable, sub-angular to angular in shape, resistant to weathering and free from structural defects such as weak seams and cracks.

2.1.1 The suitable shape of the individual stones shall be angular, meeting the gradation in 2.1.1.2 to create interlocking riprap to provide stability of the slope or channel. Round, thin and platy, elongated or needle-like shapes shall not be used.

2.1.1.1 The suitable riprap stone shape is determined by the Length to Thickness ratio, where Length is the longest dimension and Thickness is the shortest dimension, measured in perpendicular axes to each other. The suitable riprap stone shape shall have a length to thickness ratio of no greater than 3.

2.1.1.2 The gradation requirements of the riprap classes in Table 583-1 are based on the stone size Width, the largest dimension perpendicular to the Length and Thickness, and the distribution of stone sizes by volume. The volume distribution requires that 15 percent of the stone in the mass shall be no larger than the volume shown in the table (< 15% column), and 15 percent of the stone in the mass shall be no smaller than the volume shown in the table (> 85% column). The remaining 70 percent of the stone in the mass shall have a volume between these requirements, averaging to the volume shown in the table (15% - 85% column). None of the stones in the mass shall exceed the maximum volume shown in the table (Maximum column).

Table 583-1

Riprap Classes and Sizes			Percentage Distribution of Particle Sizes by Volume (cubic feet)			
Class	Nominal Size (in)	Maximum Size (in)	< 15%	15% – 85%	> 85%	Maximum
I	6	12	0.05	0.14	0.31	1.0
III	12	24	0.4	1.0	2.5	6.5
V	18	36	1.3	3.5	8.5	22
VII	24	48	3	8	19	53
IX	36	72	10	27	65	179

Note: Nominal Size and Maximum Size are based on the Width dimension of the stone. The riprap classes conform to the standard classes described in the FHWA HEC-23 publication.

2.1.2 The sources from which the stone is obtained shall be selected well in advance of the time when the material will be required in the field. The acceptability of the riprap stone shape and grading will be determined by the Engineer.

2.1.3 Control of the gradation will be completed by visual inspection approval by the Engineer of a stockpile at the quarry or other agreed site. Mechanical equipment as needed to assist in checking the stockpile gradation shall be provided by the Contractor. Stockpile replenishment will require re-approval.

2.2 Gravel blanket material shall conform to 209.2.1.2.

2.3 Geotextile shall conform to 593.2.

Construction Requirements

3.1 Preparation of slopes. Slopes that will be covered by riprap shall be free of brush, trees, stumps, and other organic material and shall be graded to a smooth surface. All soft material shall be removed to the depth shown on the plans or as directed and replaced with approved material per 203.3.6. It is the Contractor's responsibility to protect embankments and excavated slopes from erosion during construction of the riprap covered slope.

3.2 Gravel blanket construction. When called for on the plans, the gravel blanket shall be placed on the prepared area to the specified thickness in one operation, using methods which will not cause segregation of particle sizes within the layer. The surface of the finished layer shall be even and free from mounds or windrows.

3.3 Geotextile placement. Geotextile shall be placed in accordance with 593.3.

3.4 Riprap placement. Riprap shall be constructed to the dimensions shown on the plans or as directed by the Engineer.

3.4.1 Placement of riprap shall be conducted as soon as possible after gravel blanket or geotextile placement.

3.4.2 Placement of the riprap shall be started at the toe (key trench) and progress up the slope. The key trench at the bottom of the riprap shall be constructed as shown on the plans. If bedrock is encountered at the key trench it shall be brought to the attention of the Engineer to determine if modification to the riprap installation is needed.

3.4.3 Riprap shall be placed over geotextile by methods that do no stretch, tear, puncture or reposition the fabric. Riprap smaller than 1.5 cu. ft. in volume shall be placed with drop heights of less than 3 ft. to the placement surface. Riprap greater than 1.5 cu. ft. in volume shall be placed with no free fall height.

3.4.4 Equipment such as a clamshell, orange-peel bucket, skip or hydraulic excavator shall be used to place the riprap so it is well distributed and there is no large accumulations of either the larger or smaller sizes of stone. Dump trucks or front-end loaders tracked or wheeled vehicles shall not be used since they can destroy the interlocking integrity of the stone when driven over previously placed riprap. Placing the riprap by end dumping on the slopes will cause segregation and will not be permitted.

3.4.5 The riprap shall be placed in a manner which produces a well-graded mass. The larger stones shall be well distributed and the entire mass of riprap shall conform approximately to the gradation specified. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the uniformity of gradation and surface specified. Fill voids between larger stones with small stones to ensure interlocking between the riprap.

3.4.6 After the riprap is in place, it shall be compacted by impacting (ramming) the exposed surface to produce a tight, locked surface, not varying more than 6" from the elevations shown on the plans.

3.4.7 Riprap placed in water requires close observation and increased quality control to ensure the required thickness, gradation and coverage is achieved.

Method of Measurement

4.1 Riprap will be measured by the cubic yard.

4.1.1 If the Engineer determines that in-place measurement is impracticable, the quantity for payment will be determined by loose measure in the hauling vehicle on the basis that 1 cubic yard vehicle measure is equivalent to 0.7 cubic yard in place.

Basis of Payment

5.1 The accepted quantity of riprap will be paid for at the Contract unit price per cubic yard (cubic meter) complete in place.

5.1.1 Only when the stone is examined in accordance with 2.1 and examination proves the gradation to be acceptable will payment be made as provided in 109.04.

5.1.2 Gravel blanket material specified or ordered will be paid for under Section 209.

5.1.3 Geotextile specified or ordered will be paid for under Section 593.

5.1.4 The accepted quantity of excavation required for placing riprap and for placing any underlying gravel blanket will be paid for under the item of excavation being performed. Excavation above refers only to excavation of original ground or to material ordered removed not shown on the plans.

5.1.5 Free borrow will not be required to replace the accepted quantity of stone obtained from the excavation. However, when the plans do not call for borrow but the quantity of material removed from excavation for use under this item requires the Contractor to furnish borrow to complete the work, such borrow will be subsidiary.

5.1.6 Replacement slope material resulting from the requirements of 3.1 will be paid in accordance with 203.5.1.9.

Pay item and unit:

583.1	Riprap, Class I	Cubic Yard
583.3	Riprap, Class III	Cubic Yard
583.5	Riprap, Class V	Cubic Yard
583.7	Riprap, Class VII	Cubic Yard
583.9	Riprap, Class IX	Cubic Yard

SECTION 585 -- STONE FILL

Description

1.1 This work shall consist of furnishing and placing a dense stone fill at the locations shown on the plans or ordered. Stone Fill is typically required for stability of embankment fill and soil cut slopes steeper than 2 horizontal to 1 vertical, although slopes at a flatter grade with water seepage or subject to submergence, such as in water quality treatment basins, could require stone fill. Stone fill is also used for erosion protection at pipe outlets, in drainage channels and for other drainage structures where expected water flows and velocities may require it.

Materials

2.1 Stone for stone fill shall be approved quarry stone, or broken rock of a hard, sound, and durable quality. The stones and spalls shall be so graded as to produce a dense fill with a minimum of voids.

2.1.1 Class A stone shall be irregular in shape with approximately 50 percent of the mass having a minimum volume of 12 ft^3, approximately 30 percent of the mass ranging between 3 and 12 ft^3, approximately 10 percent of the mass ranging between 1 and 3 ft^3, and the remainder of the mass composed of spalls.

2.1.2 Class B stone shall be irregular in shape with approximately 50 percent of the mass having a minimum volume of 3 ft^3, approximately 40 percent of the mass ranging between 1 and 3 ft^3, and the remainder of the mass composed of spalls.

2.1.3 Class C stone shall consist of clean, durable fragments of ledge rock of uniform quality, reasonably free from thin or elongated pieces. The stone shall be made from rock which is free from topsoil and other organic material. The stone shall be graded as follows:

Sieve Size	Percentage by Weight Passing
12 in	100
4 in	50 - 90
1-1/2 in	0 - 30
3/4 in	0 - 10

2.1.4 Class D stone shall conform to Table 520-3 - Coarse Aggregate, Standard Stone Size No. 467.

2.1.5 Spalls for filling voids shall be stones or broken rock ranging downward from a maximum size of 1 ft^3.

2.2 Gravel blanket material shall conform to 209.2.1.2.

2.3 Geotextile shall conform to Section 593.

Construction Requirements

3.1 Stones and spalls for stone fill shall be deposited and graded to eliminate voids and obtain a dense mass throughout the course. The spalls shall be tamped into place using an equipment bucket or other approved method.

3.1.1 When stone fill is placed on a slope, the stones shall be deposited in such a manner as not to dislodge the underlying material unnecessarily.

3.1.2 When stone fill is placed on a geotextile, it shall be deposited in a manner to maintain the integrity of the geotextile.

3.2 When gravel blanket is shown or ordered, the gravel shall be placed in layers not exceeding 12" in depth unless otherwise ordered.

3.3 The completed surface shall approximate the lines and grades shown or ordered. When ordered, stone placed over 1 ft. outside or above such lines and grades shall be removed.

3.4 Stone fill (Bridge) shall be placed within the limits shown on the plans.

Method of Measurement

4.1 Stone fill will be measured by the cubic yard and in accordance with 109.01.

Basis of Payment

5.1 The accepted quantity of stone fill of the class specified will be paid for at the Contract unit price per cubic yard complete in place.

5.2 Gravel blanket material specified or ordered will be paid for under Section 209.

5.3 Geotextile specified or ordered will be paid for under Section 593.

5.4 The accepted quantity of excavation required for placing stone fill and for placing any underlying gravel blanket will be paid for under the item of excavation being performed. Excavation herein refers only to excavation of original ground or to material ordered removed not shown on the plans.

5.5 Free borrow will not be required to replace the accepted quantity of stone obtained from the excavation. However, when the plans do not call for borrow, but the quantity of material removed from excavation for use under this item requires the Contractor to furnish borrow to complete the work, such borrow will be subsidiary.

Pay items and units:

585.1	Stone Fill, Class A	Cubic Yard
585.2	Stone Fill, Class B	Cubic Yard
585.21	Stone Fill, Class B (Bridge)	Cubic Yard
585.3	Stone Fill, Class C	Cubic Yard
585.4	Stone Fill, Class D	Cubic Yard

SPECIAL PROVISION

AMENDMENT TO SECTION 644 -- GRASS SEED

Item 644.65 - Riparian Seed Mix

This special provision applies to riparian seed mix treatments only and does not modify or amend other provisions of this Section.

Description

1.1 This work shall consist of furnishing and applying riparian seed mixture (grass and other herbaceous species) along with site preparation. The riparian seed mix shall be applied to all riparian buffer areas shown on the plans or as ordered. The Engineer shall be contacted to coordinate this seeding.

Materials

2.1 General.

2.1.1 All seed shall meet the requirements specified in Section 644.2.

2.1.2 Seed mix shall be delivered to the project in labeled container(s). Official seed tags and shipment invoices from the seed suppliers shall be furnished to the Engineer with each seed delivery on the project. Seed may be sampled and tested by the State to verify the seed tag information.

2.1.2.1 The weight of the pure live seed (PLS) is computed by the labeled purity percent times the labeled germination percent times the weight.

2.1.2.2 To illustrate the method of computing the PLS content of individual seed specie/variety from the tag data, the following example is given:

Required: 20 pounds (PLS) of a specified seed specie/variety.

Seed Tag Data: The specie/variety is 99.41 percent pure and 92 percent germination.

Conversion to PLS: 20 pounds divided by the product of .9941 and .92 equals 21.8 pounds required to meet 20 pounds PLS.

2.1.3 Seed which has become wet, moldy, or otherwise damaged shall not be used.

2.1.4 The Engineer will inspect each seed type for acceptability, upon delivery to the project. Upon acceptance, the seed types shall be thoroughly mixed in specified proportions.

2.2 The seed quality and mixtures are based on pure live seed and shall conform to the following table:

RIPARIAN SEED MIX

BOTANICAL NAME	COMMON NAME	PURE LIVE SEED LBS/ACRE
Panicum clandestinum	Deertongue	6
Elymus virginicus	Virginia Wildrye	3.3
Sorghastrum nutans	Indiangrass	3.2
Andropogon gerardii	Big Bluestem	2
Panicum virgatum	Switchgrass	1.4
Baptisia tinctoria	Wild Inidgo	.8
Rudbeckia hirta	Blackeyed Susan	.6
Asclepias incarnata	Swamp Milkweed	.5
Heliopsis helianthoides	Oxeye Sunflower	.5
Juncus effusus	Soft Rush	.4
Juncus tenuis	Path Rush	.4
Aster novae-angliae	New England Aster	.35
Eupatorium perfoliatum	Boneset	.2
Vernonia noveboracensis	New York Ironweed	.2
Eupatorium fistulosum	Joe Pye Weed	.1
Aster umbellatus	Flat Topped White Aster	.05
	RIPARIAN SEED POUNDS/ACRE	20
Cover Crop		
Grain Oats	Avena sativa	30
	RIPARIAN SEED MIX TOTAL POUNDS/ACRE	50

2.3 Unavailability of any of the specified seed types shall be verified by submitting a list to the Engineer containing at least 3 sources contacted. Substitutions for the above table will be permitted only upon approval of the Engineer.

2.4 Straw mulch shall consist of good quality certified straw, free of rot and noxious weeds and seeds, and inspected and approved by the Engineer prior to its use.

Construction Requirements

3.1 All areas to be seeded shall be graded, tilled, and raked to establish a friable seedbed.

3.2 Seed shall be sown between April 1st and August 15th. Permission to extend the planting dates as defined in Section 650.3.1 must be requested from the Engineer in writing at least five days before the proposed off-season planting.

3.3 Seeding Method.

3.3.1 Seeding shall be done by a dry or hydraulic method. The selected mechanical seeder and applicator shall be those which can assure an accurate and uniform seed distribution. All seeding equipment shall be approved by the Engineer prior to use.

3.3.2 Seed mixtures shall be sown at the specified seeding rates. Inert carriers may be approved to assure proper distribution. Small and large seeds shall be sown separately, unless equipment specifically designed for simultaneous sowing of variable seed sizes is utilized.

3.3.2.1 The cover crop as stated in the chart above shall be integrated into seed mix prior to seeding.

3.3.3 The seed shall be applied so as to make firm contact with the seedbed which may require light raking or rolling as directed by the Engineer.

3.3.4 Straw mulch shall be applied to each seeded area as soon as possible after each area has been properly prepared. When seed is sown prior to placing mulch, the mulch shall be placed on the seeded areas within 48 hours after seeding. Mulch shall be applied such that 50 percent of the ground is visible when standing directly above the mulched area. Blowing mulch will be permitted provided the Contractor controls the mulching operation so as not to infringe on property owners or the traveling public. Blown mulch shall be applied in such a manner resulting in a minimum amount of matting that would retard the growth of plants. Matted mulch or bunches shall be removed or otherwise remedied.

3.3.5 Immediately after straw mulching operations, water shall be applied with a gentle spray to safeguard against erosion or movement of the crop seed.

3.3.6 Fertilization shall not be required unless otherwise specified by the Engineer.

3.4 Establishment Maintenance.

3.4.1 Seeded areas shall be kept reasonably moist with weekly waterings throughout the first 8 weeks unless otherwise specified by the Engineer. Thereafter, adequate waterings shall be required in dry periods to prevent wilting of the seedlings. The method of watering shall be such that assures a gentle watering without soil erosion and approved by the Engineer.

3.4.2 The Contractor shall perform any needed work in order to develop and maintain a healthy vegetation cover throughout the duration of the contract. Regularly scheduled monitoring and follow-up maintenance work, including rewatering and reseedings as necessary shall be the Contractor's responsibility.

3.5.1 The Contractor shall be responsible for developing and maintaining an acceptable density of vegetation cover. To be acceptable, a vegetation cover shall show a reasonably thick, uniform stand, free from sizeable areas of thin or bare spots, with a uniform count of at least 10 plants of specified species per square foot.

Method of Measurement

4.1 Riparian seed mix will be measured by the pound based upon the delivery slips and tags furnished the Engineer, but not to exceed the rate specified or ordered. Seeding establishment

areas will be measured by the acre and such measurements will be made to the nearest 0.01 of an acre.

Basis of Payment

5.1 The accepted quantity of riparian seed mix will be paid for at the contract unit price per pound, complete in place. Watering and labor associated with this item is subsidiary.

5.2 The cover crop included in this seed mix will be subsidiary to this item.

5.3 No additional compensation will be made for approved seed substitutions.

5.4 Grading, tilling, and raking to establish a friable seedbed will be subsidiary.

5.5 Straw mulch will be subsidiary.

Pay items and units:

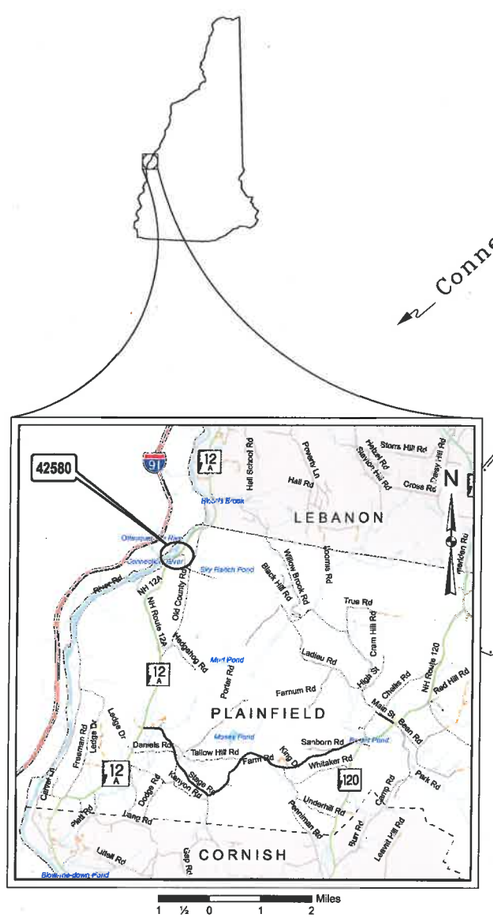
644.65	Riparian Seed Mix	Pound

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

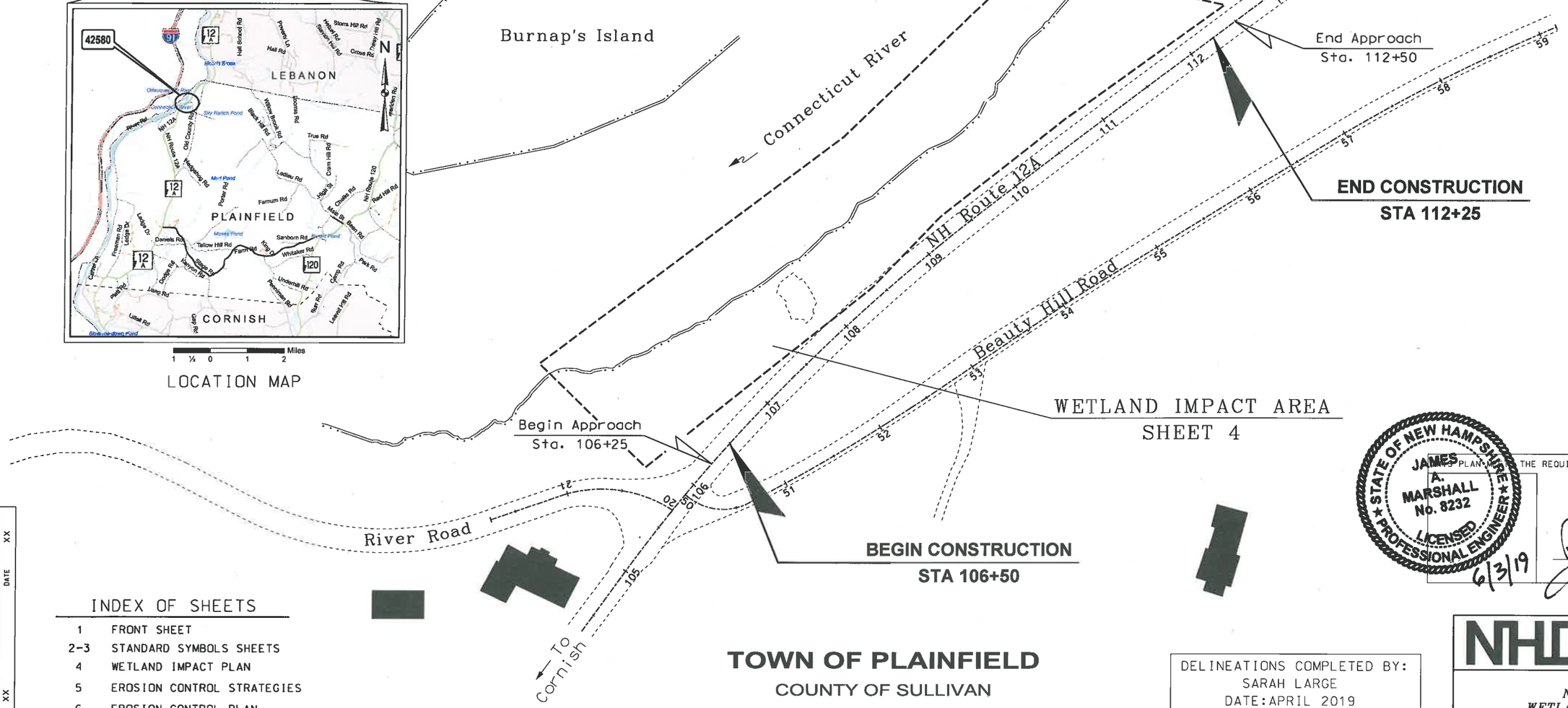
WETLANDS PLANS
BETTERMENT PROJECT

N.H. PROJECT NO. 42580
NH ROUTE 12A

DESIGN DATA	
AVERAGE DAILY TRAFFIC 20 18	3616
AVERAGE DAILY TRAFFIC 20 XX	--
PERCENT OF TRUCKS	--
DESIGN SPEED	50 MPH
LENGTH OF PROJECT	625 FT



LOCATION MAP



THE REQUIREMENTS OF ENV WT 404.04 RIP-RAP

STATE OF NEW HAMPSHIRE JAMES A. MARSHALL No. 8232 LICENSED PROFESSIONAL ENGINEER

6/3/19

Signature

INDEX OF SHEETS

1	FRONT SHEET
2-3	STANDARD SYMBOLS SHEETS
4	WETLAND IMPACT PLAN
5	EROSION CONTROL STRATEGIES
6	EROSION CONTROL PLAN
7	LANDSCAPE PLAN
8	TYPICAL SECTION

TOWN OF PLAINFIELD
COUNTY OF SULLIVAN

SCALE: 1" = 50'

FOR CONSTRUCTION AND ALIGNMENT DETAILS - SEE CONSTRUCTION PLANS

DELINEATIONS COMPLETED BY:
SARAH LARGE
DATE: APRIL 2019

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

NH ROUTE 12A
WETLAND IMPACT PLANS
TOWN OF PLAINFIELD
05-31-2019

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
N/A	42580	1	8

DRAWN BY	jaa	DATE	05/2019
CHECKED BY	XX	DATE	XX

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — existing roadway — (pavement removed outside slope lines)

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed) — (label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM — OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream — pond — (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)

TREE OR STUMP (CROSS-SECTIONS) — (show station, circumference in feet & type)

HEDGE — (label type)

MONITORING WELL — mon W

WELL — W

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing — PROPOSED — bgr — cgr

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) — (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl — lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 — PUB2E

DELINEATED WETLAND — DW
ORDINARY HIGH WATER — OHW
TOP OF BANK — TOB
TOP OF BANK & ORDINARY HIGH WATER — TOBOHW
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND — PWET
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — CDL
TIDAL BUFFER ZONE — TBZ
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE — HOTL
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL — VP
SPECIAL AQUATIC SITE — SAS
REFERENCE LINE — REF
WATER FRONT BUFFER — WB50
NATURAL WOODLAND BUFFER — NWB150
PROTECTED SHORELAND — PS250
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES — INV

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY — FP500
100 YEAR FLOODPLAIN BOUNDARY — FP100
FLOODWAY — FW

ENGINEERING

CONSTRUCTION BASELINE — 30 — 31 — 32
PC, PT, POT (ON CONST BASELINE)
PI (IN CONSTRUCTION BASELINES)
INTERSECTION OR EQUATION OF TWO LINES
ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)
PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)
CLEARING LINE — SLOPE LINE
SLOPE LINE — SLOPE LINE (FILL) — SLOPE LINE (CUT)
PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

SHEET 1 OF 2

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
11-21-2014	stdsymb1_2	42580	2	8

DRAINAGE

MANHOLE
CATCH BASIN — cb — (existing) — (PROPOSED)
DROP INLET — di
DRAINAGE PIPE (existing) — (label size & type)
DRAINAGE PIPE (PROPOSED)
UNDERDRAIN (existing) W/ FLUSHING BASIN — fb — (label size & type)
UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN
show direction of flow
HEADER (existing & PROPOSED) — (with stone outlet protection)
END SECTION (existing & PROPOSED) — METAL or PLASTIC — RCP
OPEN DITCH (PROPOSED)
EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE — (label type)
RR RIGHT-OF-WAY LINE
PROPERTY LINE — PL — PL
PROPERTY LINE (COMMON OWNER) — Z — Z
TOWN LINE — BOW / CONCORD
COUNTY LINE — COOS / GRAFTON
STATE LINE — MAINE / NEW HAMPSHIRE
NATIONAL FOREST
CONSERVATION LAND — LC — LC
BENCH MARK / SURVEY DISK
BOUND — bnd — (PROPOSED)
STATE LINE/ TOWN LINE MONUMENT — S/L — T/L
NHDOT PROJECT MARKER
IRON PIPE OR PIN — ip
DRILL HOLE IN ROCK — dh
TAX MAP AND LOT NUMBER — 156 / 14 — 1642/341 — 6.80 Ac.±
PROPERTY PARCEL NUMBER — 12
HISTORIC PROPERTY — H

UTILITIES

existing — PROPOSED

TELEPHONE POLE
POWER POLE
JOINT OCCUPANCY
MISCELLANEOUS/UNKNOWN POLE
GUY POLE OR PUSH BRACE
(plot point at face not center of symbol)
LIGHT POLE
LIGHT ON POWER POLE
LIGHT ON JOINT POLE

POLE STATUS: REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.: R L — P+04 25.0' — T+04 25.0'

RAILROAD — (label ownership)
RAILROAD SIGN
RAILROAD SIGNAL
UTILITY JUNCTION BOX — jb — JB
OVERHEAD WIRE — OW — OW — (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned) — W — W — PW — PW
SEWER — S — S — PS — PS
TELEPHONE — T — T — PT — PT
ELECTRIC — E — E — PE — PE
GAS — G — G — PG — PG
LIGHTING — L — L — PL — PL
INTELLIGENT TRANSPORTATION SYSTEM — ITS — ITS
FIBER OPTIC — FO — FO — PFO — PFO
WATER SHUT OFF
GAS SHUT OFF
HYDRANT — hyd — HYD

MANHOLES

SEWER — MHS
TELEPHONE — MHT
ELECTRICAL — MHE
GAS — MHG
UNKNOWN

TRAFFIC SIGNALS / ITS

existing — PROPOSED

MAST ARM (existing) — 30' MA (NOTE ANGLE FROM ℄)
OPTICOM RECEIVER
OPTICOM STROBE
TRAFFIC SIGNAL
PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT
SIGNAL CONDUIT — C — PC
CONTROLLER CABINET — cc — CC
METER PEDESTAL — mp — MP
PULL BOX — pb — PB
LOOP DETECTOR (QUADRUPOLE) — (label size)
LOOP DETECTOR (RECTANGULAR) — (label size)
CAMERA POLE (CCTV)
FIBER OPTIC DELINEATOR — fod — FOD
FIBER OPTIC SPLICE VAULT — SVF
ITS EQUIPMENT CABINET — its — ITS
VARIABLE SPEED LIMIT SIGN
DYNAMIC MESSAGE SIGN
ROAD AND WEATHER INFO SYSTEM

CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS — B-1
CURB MARK NUMBER - GRANITE — G-1
CLEARING AND GRUBBING AREA — A
DRAINAGE NOTE — 1
EROSION CONTROL NOTE — A
FENCING NOTE — A
GUARDRAIL NOTE — 1
ITS NOTE — 1
LIGHTING NOTE — A
TRAFFIC SIGNAL NOTE — 1

SHEET 2 OF 2

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

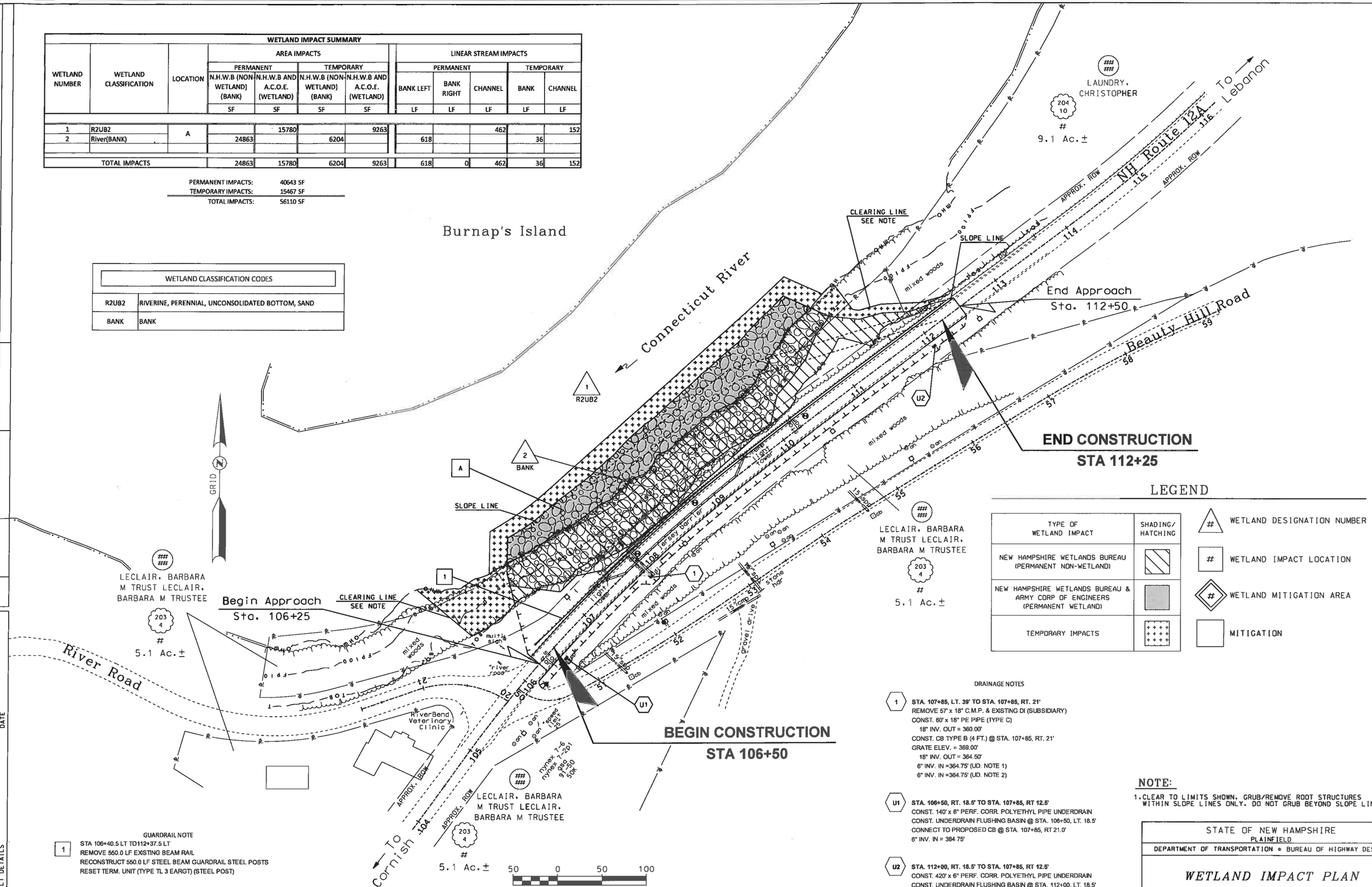
STANDARD SYMBOLS

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
9-1-2016	stdsymb1_2	42580	3	8

WETLAND IMPACT SUMMARY												
WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS				LINEAR STREAM IMPACTS				
			PERMANENT		TEMPORARY		PERMANENT			TEMPORARY	
			N.H.W.B (NON-WETLAND) (BANK)	N.H.W.B AND A.C.O.E. (WETLAND)	N.H.W.B (NON-WETLAND) (BANK)	N.H.W.B AND A.C.O.E. (WETLAND)	BANK LEFT	BANK RIGHT	CHANNEL	BANK	CHANNEL
			SF	SF	SF	SF	LF	LF	LF	LF	LF
1	R2UB2	A		15780		9263			462		152
2	River(BANK)		24863		6204		618			36	
TOTAL IMPACTS			24863	15780	6204	9263	618	0	462	36	152

PERMANENT IMPACTS: 40643 SF
TEMPORARY IMPACTS: 15467 SF
TOTAL IMPACTS: 56110 SF

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



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

WETLAND DESIGNATION NUMBER
WETLAND IMPACT LOCATION
WETLAND MITIGATION AREA
MITIGATION

GUARDRAIL NOTE

1 STA 106+40.5 LT TO112+37.5 LT
REMOVE 550.0 LF EXSTING BEAM RAIL
RECONSTRUCT 550.0 LF STEEL BEAM GUARDRAIL STEEL POSTS
RESET TERM. UNIT (TYPE TL 3 EARGT) (STEEL POST)

DRAINAGE NOTES

1 **STA. 107+85, LT. 39' TO STA. 107+85, RT. 21'**
REMOVE 57' x 18" C.M.P. & EXISTING DI (SUBSIDIARY)
CONST. 60' x 18" PE PIPE (TYPE C)
18" INV. OUT = 360.00'
CONST. CB TYPE B (4 FT.) @ STA. 107+85, RT. 21'
GRATE ELEV. = 369.00'
18" INV. OUT = 364.50'
6" INV. IN =364.75' (UD. NOTE 1)
6" INV. IN =364.75' (UD. NOTE 2)

U1 **STA. 106+50, RT. 18.5' TO STA. 107+85, RT 12.5'**
CONST. 140' x 6" PERF. CORR. POLYETHYL PIPE UNDERDRAIN
CONST. UNDERDRAIN FLUSHING BASIN @ STA. 106+50, LT. 18.5'
CONNECT TO PROPOSED CB @ STA. 107+85, RT 21.0'
6" INV. IN = 364.75'

U2 **STA. 112+00, RT. 18.5' TO STA. 107+85, RT 12.5'**
CONST. 420' x 6" PERF. CORR. POLYETHYL PIPE UNDERDRAIN
CONST. UNDERDRAIN FLUSHING BASIN @ STA. 112+00, LT. 18.5'
CONNECT TO PROPOSED CB @ STA. 107+85, RT 21.0'
6" INV. IN = 364.75'

NOTE:

1. CLEAR TO LIMITS SHOWN. GRUB/REMOVE ROOT STRUCTURES WITHIN SLOPE LINES ONLY. DO NOT GRUB BEYOND SLOPE LINES.

STATE OF NEW HAMPSHIRE
PLAINFIELD
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN

WETLAND IMPACT PLAN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42580wetplans	42580	4	8

REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	SEL	DATE	05-10-19
NEW DESIGN	JAA	DATE	05/2019
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
   - 1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
   - 1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
   - 1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
   - 1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
   - 1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WQ 1500 REQUIREMENTS (HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM)
   - 1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.

2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
   - 2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
   - 2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
   - 2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
   - 2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
     - (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
     - (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
     - (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
     - (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
   - 2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
   - 2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
   - 2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
   - 2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30" AND MAY 1" OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
     - (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
     - (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
     - (C) AFTER NOVEMBER 30" INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
     - (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WQ 1505.02 AND ENV-WQ 1505.05.
     - (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
   - 3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
   - 3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
   - 3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
   - 3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
   - 3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.

4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
   - 4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
   - 4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
   - 4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1" THROUGH NOVEMBER 30", OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.

5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
   - 5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
   - 5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
   - 5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
   - 5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
   - 5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.

6. PROTECT SLOPES:
   - 6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
   - 6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
   - 6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
   - 6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.

7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
   - 7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
   - 7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.

8. PROTECT STORM DRAIN INLETS:
   - 8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
   - 8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
   - 8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
   - 8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.

9. SOIL STABILIZATION:
   - 9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
   - 9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
   - 9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR, IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
   - 9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.

10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
    - 10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WQ 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
    - 10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
    - 10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
    - 11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
    - 11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
    - 11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS. WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
    - 11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
    - 11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
    - 11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
    - 11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
    - 11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
    - 11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
    - 12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500: ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
    - 12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
    - 12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
    - 12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
    - 12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
    - 12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
    - 12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.

13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
    - 13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
    - 13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
    - 13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
    - 13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.

14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
    - 14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
    - 14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
    - 14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WQ 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES'	YES'	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES'	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

STATE OF NEW HAMPSHIRE

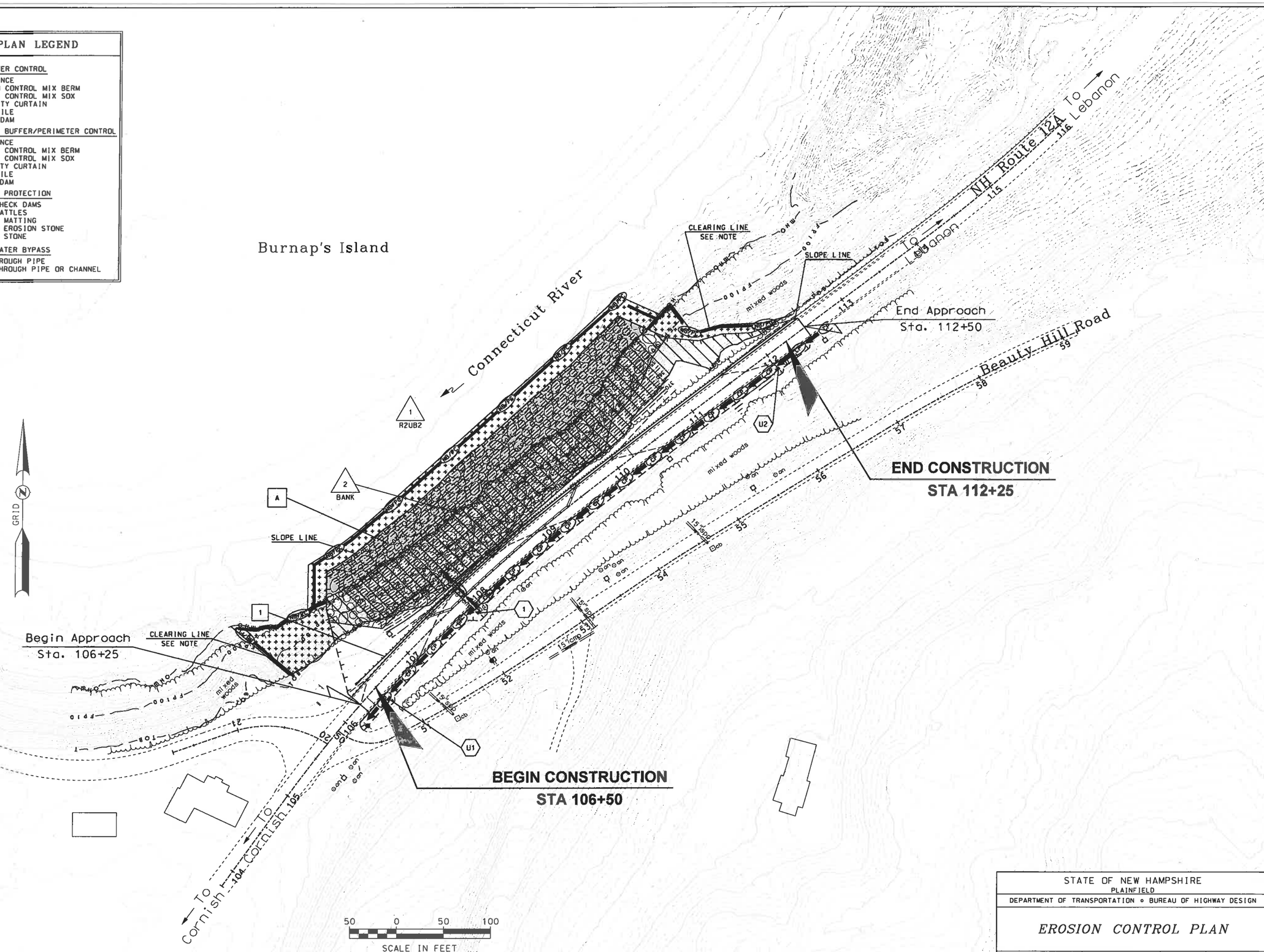
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF HIGHWAY DESIGN

EROSION CONTROL STRATEGIES

REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-21-2015	erosstrat	42580	5	8

EROSION CONTROL PLAN LEGEND

PC	PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
NB/PC	NATURAL BUFFER/PERIMETER CONTROL SILT FENCE EROSION CONTROL MIX BERM EROSION CONTROL MIX SOX TURBIDITY CURTAIN SHEET PILE COFFER DAM
CP	CHANNEL PROTECTION STONE CHECK DAMS STRAW WATTLES CHANNEL MATTING CLASS D EROSION STONE CLASS C STONE
CWB	CLEAN WATER BYPASS PUMP THROUGH PIPE DRAIN THROUGH PIPE OR CHANNEL



REVISIONS AFTER PROPOSAL			
NUMBER	DATE	STATION	DESCRIPTION

SDR PROCESSED	SEL	DATE	05-10-19
NEW DESIGN	JAA	DATE	05/2019
SHEET CHECKED	NAME3	DATE	DATE3
AS BUILT DETAILS		DATE	

STATE OF NEW HAMPSHIRE
PLAINFIELD
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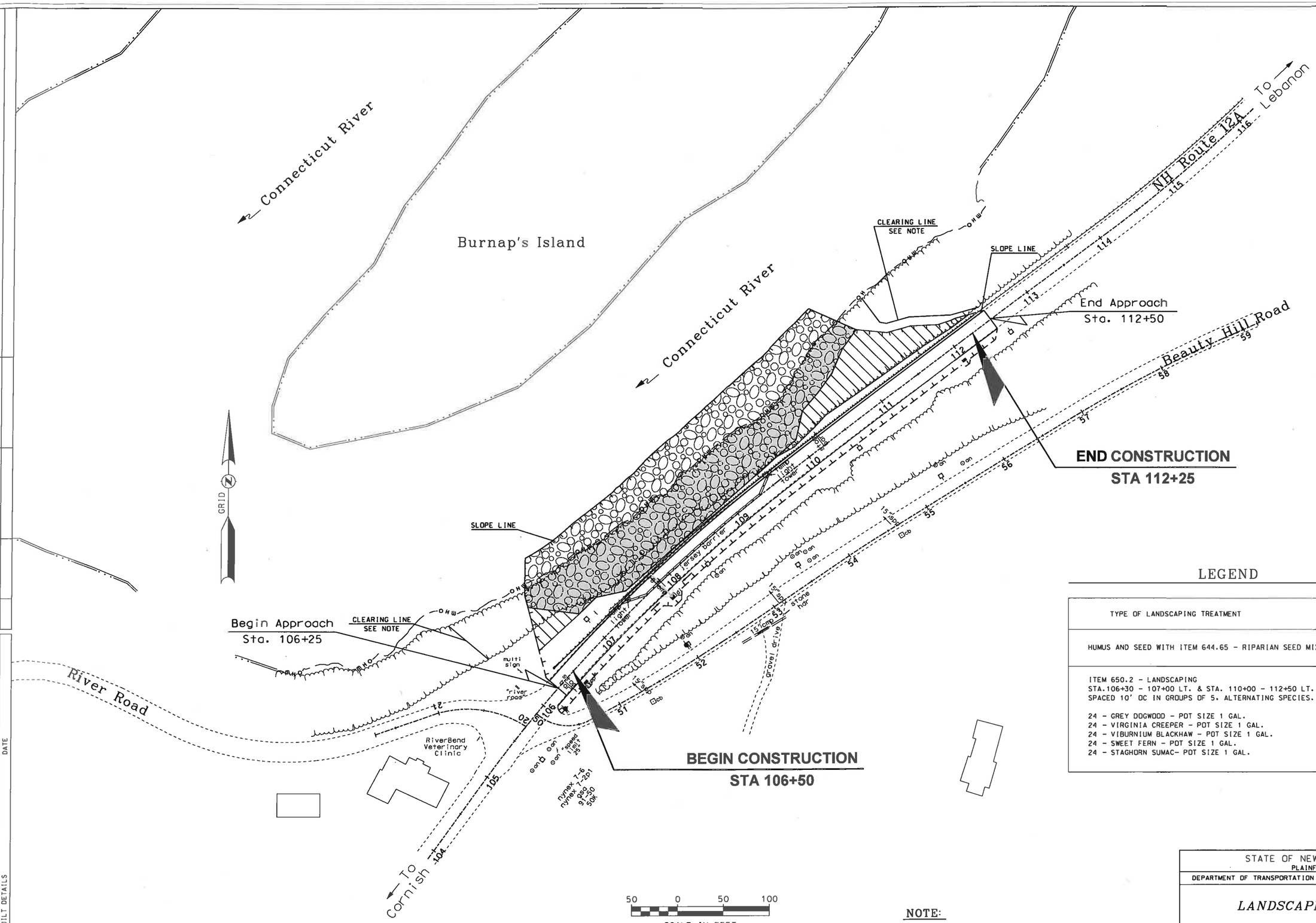
EROSION CONTROL PLAN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42580wetplans	42580	6	8



LEGEND

TYPE OF LANDSCAPING TREATMENT	SHADING/ HATCHING
HUMUS AND SEED WITH ITEM 644.65 - RIPARIAN SEED MIX	
ITEM 650.2 - LANDSCAPING STA.106+30 - 107+00 LT. & STA. 110+00 - 112+50 LT. SPACED 10' OC IN GROUPS OF 5. ALTERNATING SPECIES. 24 - GREY DOGWOOD - POT SIZE 1 GAL. 24 - VIRGINIA CREEPER - POT SIZE 1 GAL. 24 - VIBURNIUM BLACKHAW - POT SIZE 1 GAL. 24 - SWEET FERN - POT SIZE 1 GAL. 24 - STAGHORN SUMAC- POT SIZE 1 GAL.	

NOTE:

1. CLEAR TO LIMITS SHOWN. GRUB/REMOVE ROOT STRUCTURES WITHIN SLOPE LINES ONLY. DO NOT GRUB BEYOND SLOPE LINES.

STATE OF NEW HAMPSHIRE
PLAINFIELD
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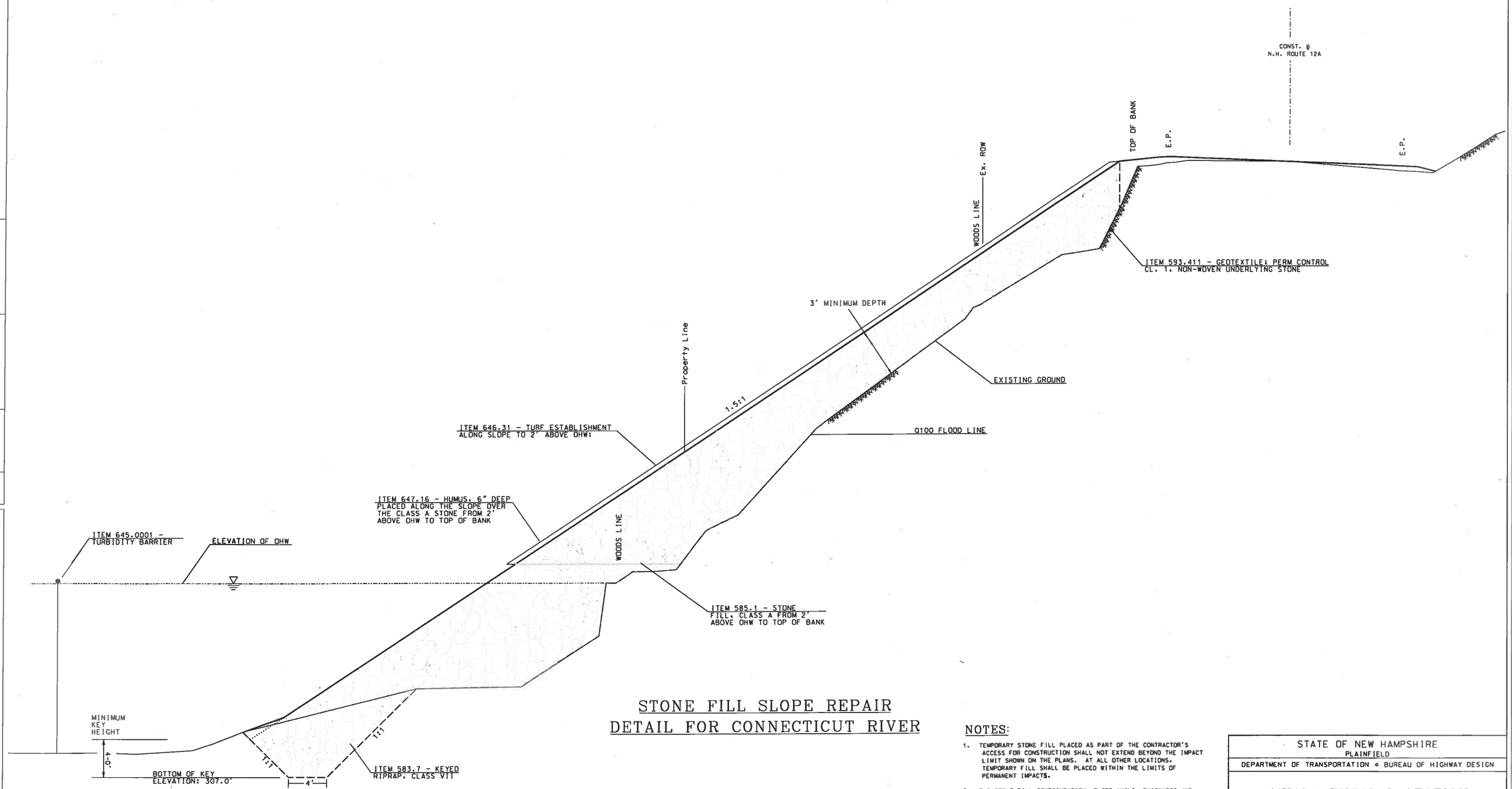
LANDSCAPING PLAN

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42580wetplans	42580	7	8

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	SEL	DATE 05-10-19
NEW DESIGN	JAA	DATE 05/2019
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE



STONE FILL SLOPE REPAIR
DETAIL FOR CONNECTICUT RIVER

NOTES:

1. TEMPORARY STONE FILL PLACED AS PART OF THE CONTRACTOR'S ACCESS FOR CONSTRUCTION SHALL NOT EXTEND BEYOND THE IMPACT LIMIT SHOWN ON THE PLANS. AT ALL OTHER LOCATIONS, TEMPORARY FILL SHALL BE PLACED WITHIN THE LIMITS OF PERMANENT IMPACTS.
2. THE STONE FILL CONFIGURATION, SLOPE ANGLE, THICKNESS AND LIMITS OF TREATMENT MAY BE MODIFIED BY THE ENGINEER BASED ON THE CONDITIONS ENCOUNTERED IN THE FIELD DURING CONSTRUCTION.

STATE OF NEW HAMPSHIRE
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NH12A TYPICAL SECTION

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
42580typ	42580	8	8

REVISIONS AFTER PROPOSAL

NUMBER	DATE	STATION	STATION	DESCRIPTION

SDR PROCESSED	SEL	DATE 05-10-19
NEW DESIGN	JAA	DATE 05/2019
SHEET CHECKED	NAME3	DATE DATE3
AS BUILT DETAILS		DATE