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Seacoast Reliability Project
Avoidance and Minimization

Best Management Practices and Construction Plan for Protected Wildlife and Plants
FINAL

Prepared For:
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1.0 Introduction

This document summarizes best management practices (BMPs) and time-of-year (TOY) considerations for construction of the Seacoast Reliability Project (SRP, or Project) to avoid and minimize impacts to protected wildlife and plant resources. The resources described herein are those that must be considered to meet permitting requirements; they are based on the regulatory status of the resources and input from the resource agencies (US Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), NH Fish and Game Department (NHFG), NH Natural Heritage Bureau (NHB), and NH Department of Environmental Services (DES). The TOY and BMPs incorporate standard practices for these agencies, and have been reviewed by NHFG and NHB. Because the permit application review process is ongoing and authorizations for construction have not been issued yet, the measures described herein may be subject to modification. Additional input from the agencies will be incorporated if presented, and further adjustments may also be required as part of the final permit conditions.

As set forth in the Site Evaluation Committee (SEC) Application and other permit applications, the Project has been designed to avoid and minimize impacts to protected plant and wildlife species to the extent practicable. This document describes the TOYs and (Best Management Practices) BMPs that apply to each species of concern. Once approved, the locations where the TOY restrictions and BMPs apply will be depicted on the construction plan set.

Due to the complexity of the construction sequence of work, the focus of this construction BMP/TOY plan will be to avoid and mitigate impacts. Attachment 1 has a simplified summary table of TOY Restrictions, restricted activity and avoidance & BMPs.

2.0 TOY Clearing, Construction Plan and BMPs

The following restrictions are organized by species or groups of species. The restricted activities have been broadly grouped into *Clearing*, *Site Preparation*, and *Construction*. *Clearing* includes cutting of trees 3 inches in diameter at breast height (dbh) or larger, mowing, and/or brush-cutting of vegetation less than 3 inches dbh. If only one type of clearing is restricted, this is noted. *Site Preparation* includes installation of access roads and crane pads; preliminary route clearing and preparation in Little Bay, installation of erosion and sediment controls, placement of timber mats, and installation of exclusion fencing if needed; and blasting, if needed. *Construction* includes excavation, transport of construction-related materials, and assembly and installation of structures and the submarine cable within the prepared access roads and construction envelopes, and site work to initiate restoration. Pedestrian access for inspection or hand work is not restricted unless specifically noted.

2.1 Wildlife Resources

General Wildlife Avoidance Measures

Restriction Dates: Follow these recommendations at all times
Restricted Activity: Clearing, Site Preparation, and Construction
Regulatory Basis: Permit Requirements

Description: General avoidance measures and best management practices apply throughout the Project to minimize impacts to wildlife resources in general. Minimizing impacts to all wildlife and wildlife habitat supports intact habitat systems which in turn support threatened and endangered species. These measures are also important to meeting the Project's wetland and stormwater permitting requirements. Construction Maps will include indicators of known and potential wildlife habitat and should be consulted in concert with the general BMPs and other protection measures.

<u>General BMPs to Minimize Wildlife/Wildlife Habitat Impacts</u>

- Limit removal of vegetation to that necessary for construction of the project; this will leave associated wildlife habitat as intact as possible
- Adhere to the General BMPs to Minimize Vegetation Impacts (Section 2.3, below)
- Adhere to General Vegetation Restoration BMPs (Section 2.3, below)
- Adhere to Erosion Prevention and Sediment Control Plans and BMPs to prevent the degredation of wildlife habitat in areas adjacent to and downstream of work areas
- Utilize wildlife friendly erosion control where possible to reduce the risk of entrapment
- Diligently sweep work areas for rare and other species prior to establishing work areas and utilize exclusion techniques to reduce re-entry by previously removed species

Active Bald Eagle Nests

Restriction Dates: March 1 - July 31
Restricted Activity: Clearing, Site Preparation, and Construction within Nest Buffer
Regulatory Basis: Federal Migratory Bird Treaty Act; State Endangered Species Act – Threatened species

Description: Eversource conducted a helicopter survey on February 19, 2019, following the Raptor Monitoring protocol approved by NHFG (Appendix A). As of that date, there is one known active bald eagle nest within 660 feet of the project area. Prior to initiating work during the nesting season, a foot survey will be conducted for additional active nests within or adjacent to the ROW. If there is a break in work during the early portion of the nesting season (March 1- April 15), a repeat survey may be required before initiating the next stage of work.

Per the USFWS National Bald Eagle Management Guidelines, no work shall be done within 660 feet of an active bald eagle nest from March 1st to July 31st. However, adjustments to this recommended buffer may be negotiated with regulating agencies, based on the conditions of the habitat surrounding the nest, level of disturbance to which nesting eagles may already be habituated, and the nature, timing, and duration of the activities that will disturb the nest. Note that blasting may require a larger buffer distance. The fledglings of early nesters may be done using the nest before July 31. Disturbance considerations are not required for inactive nests; however, inactive nests may not be removed without agency approval.

Active Raptor Nests

Restriction Dates: Varies by Species, see Table 1
Restricted Activity: Clearing, Site Preparation, and Construction within Nest Buffer
Regulatory Basis: Federal Migratory Bird Treaty Act

Description: As of February, 2019, there are no known active raptor nests within the Right-of Way. Prior to initiating work during the nesting season, a qualified wildlife biologist will survey the ROW and the woods visible from the ROW for active nests using the Raptor Monitoring protocol approved by NHFG (Appendix A). If there is a break in work during the nesting season, a repeat survey may be required before initiating the next stage of work.

Approximate nesting season dates for raptor species that nest in New Hampshire are given in Table 1. A suitable buffer distance to protect active nests from disturbance depends on the types of intervening features between the nest; the location, nature, timing, and duration of the disturbing activity; and the level of disturbance that the nest currently experiences to which the resident nesting birds may be habituated. If a raptor nest is identified in or near the ROW, appropriate buffers distances for individual nests subject to disturbance from clearing, site preparation, or construction will be negotiated with the regulatory agencies. The nesting season dates are guidelines, and should be confirmed with site-specific observations as needed. Note that while disturbance considerations are not required for inactive nests, they may not be removed without agency approval.

Table 1. Raptor species nesting dates.

Species	Nesting Season Dates
Osprey	April 15 – August 15
Sharp-shinned hawk	April 15 – July 25
Cooper's hawk	April 1 – June 30
Red-shouldered hawk	April 1 - June 25
Broad-winged hawk	May 1 – July 30
Red-tail hawk	March 15 – July 15
American kestrel	April 1 – July 25

Northern Long-eared Bat

Restriction Dates: June 1 – July 31
Restricted Activity: Clearing (Cutting and felling of trees 3 inch dbh or larger)
Regulatory Basis: Federal Endangered Species Act – Threatened Species; State Endangered Species Act – Endangered Species

Description: The tree clearing standards put forth in the February 16, 2016 final 4(d) rule pertaining to the northern long-eared bat (NLEB) will be followed. To avoid take, based on this directive, no trees can be cleared within ¼ mile of known, occupied hibernacula at any time of the year, or within 150 feet of a known, occupied maternity roost during the June 1 – July 31 pup season. There are no known, occupied hibernacula or maternity roost trees within the applicable radii of the Project.

Eversource conducted a USFWS-approved acoustic bat survey in 2017. Northern long-eared bat calls could not be ruled out in 3 survey segments. AlthoughUSFWS' time-of-year (TOY) cutting restrictions do not apply to the project, tree clearing in these locations will be conducted outside of the maternity season to the extent possible (June-July) to minimize risks to non-flying pups.

Northern Black Racer

Restriction Dates: October 15 - April 30 (known hibernacula), April 15 through October 30 (general habitat)
Restricted Activity: Clearing, Site Preparation, and Construction
Regulatory Basis: State Endangered Species Act – Threatened Species
Description: Hibernacula - From October 15 through April 30 when racers may be entering, using, or exiting their hibernacula, no ground disturbing activities can take place in any location known by NHFG to host a hibernaculum. Surveys to date have not identified hibernacula in the Project area.

General Habitat: During the active season from April 15 through October 30, impacts to all species of snakes will be minimized by searching areas about to be impacted by clearing or site preparation for snakes, and removing them to a safe, suitable location close to their point of capture. Snake searches and removal will be conducted by a qualified Environmental Monitor. Active construction areas must be searched daily to find and remove snakes, or fenced to prevent (re)entry by snakes . The preferred approach will be determined by the Environmental Monitor, based on the frequency of snake use and how long construction activities will last in a certain area. Fencing products specifically designed to exclude reptiles from construction zones are commercially available and are designed for ease of installation and reuse. If fencing is used, it will be removed as soon as construction is complete and snakes can safely enter the area.

For black racers, BMPs also include contractor training on recognizing this species and taking the appropriate actions to protect them. All personnel must understand and implement the appropriate protective actions and notifications.

Blanding's and Spotted Turtle

Restriction Dates: April 15 through October 15, action varies by habitat type
Restricted Activity: Clearing, Site Preparation, and Construction
Regulatory Basis: State Endangered Species Act – Endangered Species/Threatened Species
Description: Blanding's and spotted turtle are known to occur in Madbury and Durham, but are not expected in Newington or Portsmouth. Minimizing impacts to Blanding's and spotted turtles requires 1) minimizing the extent of in-water work during all seasons, 2) avoiding wetland impacts to the extent practicable in all seasons, 3) avoiding crushing turtles in wetlands and uplands during the April 15 – October 15 active season, and 4) avoiding impacts to nesting habitat from May 25 through October 15. Upland work conducted between October 15 and April 15 is unlikely to impact turtles as they are restricted to their wetland hibernacula during this part of the year. Blanding's turtles generally overwinter in large open water wetlands (marshes, ponds), while spotted turtles generally use wetlands with smaller deep water areas. Neither habitat occurs within the SRP ROW. Actions for each habitat type are described below.

Wetlands: Impacts to spotted and Blanding's turtles in wetlands will be minimized by avoiding and minimizing impacts to open water and mucky substrates in all seasons to the greatest extent practicable. During the active season for turtles, impacts will be minimized by searching woody and grassy wetland vegetation within the construction zone for turtles prior to clearing and site preparation, and removing them to a safe, suitable location close to their point of capture. Construction areas that are cleared of turtles must be searched daily to find and remove turtles, or fenced to prevent (re)entry by turtles during construction. The preferred approach may be based on the frequency at which turtles are observed and how long construction activities will last in a certain area. If construction mats are used to cross an expanse of open water, the mats will be stacked in such a manner as to create underwater gaps that allow passage of aquatic animals, such as turtles. During the hibernation period, no turtle searches will be conducted as the likelihood of finding hibernating turtles is low.

Uplands: A search of upland vegetation in the proposed active construction area will be required in all ROW areas that are within 3,280 ft (0.6 miles) of a wetland suitable for spotted and Blanding's turtles as determined by the Environmental Monitor. Any turtle found will be moved to a safe, suitable location close to their point of capture prior to clearing or site preparation activity. Qualified, trained personnel (the Environmental Monitors) will search for, and move, turtles as needed. Construction areas that are cleared of turtles must be searched daily to find and remove turtles, or fenced to prevent (re)entry by turtles. The preferred approach may be based on the frequency at which turtles are observed and how long construction activities will last in a certain area.

Nesting Habitat: Habitat reviews to date have not identified likely turtle nesting areas within the ROW. If any are identified, symbolic fencing placed around the areas during the nesting season to keep all work activities from encroaching. Symbolic fencing will be designed to let turtles access these areas freely. If potential nesting habitat is part of an access road or construction pad, it will be searched for turtles prior to initiating construction activities then fenced to keep turtles out during construction. Fencing will be removed as soon as construction is complete and turtles can safely enter the area. Silt fencing can be used to exclude turtles, but fencing products specifically designed to exclude turtles from construction zones are also commercially available and are designed for ease of installation and reuse. If fencing is used, it will be removed as soon as active construction is complete and turtles can safely enter the area.
For spotted and Blanding's turtles, BMPs also include contractor training on recognizing these species and taking the appropriate actions to protect them. All personnel must understand and implement the appropriate protective actions and notifications.

New England Cottontail

Restriction Dates: March 31 through June 21
Restricted Activity: Clearing
Regulatory Basis: State Endangered Species Act – Endangered Species/Threatened Species

Description: New England cottontail (NEC) is not known currently to occur in the SRP area, but the NHFG is actively managing several sites within and near the ROW for this species. In locations identified as NEC habitat management areas, efforts will be made to minimize the amount of time that the ROW will be devoid of the brushy cover that NECs require. To the extent practicable, vegetation will be cleared between March 31 – June 21, or as otherwise directed by NHFG given the site specific considerations at these locations, by hand cutting or using a "brontosaurus" or similar equipment, and leave stumps and root systems in place. These practices will allow ample time during the growing season for woody species to re-sprout and provide necessary cover.

2.2 Fisheries

Little Bay
Restriction Dates: Proposed January 1 – August 31
Restricted Activity: Construction (submarine cable installation –preliminary site preparation will begin August 1)
Regulatory Basis: Federal Endangered Species Act; State Endangered Species Act

Description: The construction window for submarine cable installation is as follows: route clearing and preparation between August 1 and September 1; cable removal between September 1 and 15; installation of new cable via jet plow and handjetting between September 15 and December 31, which was identified as the best window to avoid or

minimize impacts to many animals, eelgrass, and summer recreation. The DES prescribed dredge window is between November 15 and March 15, but this timeframe is not feasible for the SRP because the cable cannot be installed in freezing temperatures due to the difficulty in cable handling and warranty risks. Each of the three jet plow cable installations will occur within an estimated 7 to 13-hour period and result in a mobile, ephemeral plume of suspended sediments that is expected to dissipate approximately 2 hours after the jet plow pass is completed. There will be approximately a week between each cable installation. All practicable measures will be taken to minimize sediment disturbance and suspension in the water column. These will include: manipulating the jet plow speed and water pressure to minimize sediment suspension in different substrate types within the proposed tidal constraints; maintaining silt curtains around the entire hand jetting area on the west shore, and as far seaward as effective on the east shore; where current prohibits silt curtains on the east shore, handjetting will be limited to periods of low current during slack tides; maintaining erosion and scour protection in the salt marsh work areas during construction and after restoration; and maintaining on-shore erosion controls during construction to avoid sediment entering the bay.

Table 2. Seasons in which protected fish, diadromous fish, and Essential Fish Habitat species are likely to be found in Little Bay. Shading indicates species and seasons that will be affected by the SRP Fall and Winter work window in Little Bay.

Species	Designation*	Life Stage	Spring+	Summer+	Fall+	Winter+
Protected Species						
Shortnose Sturgeon	E,E - extirpated	Adults				
Atlantic Sturgeon	T	Adults & juveniles				
American Eel	SC-A1	Juveniles	X	X		
		Adults	X	X	X	X
Diadromous Fish						
Alewife (Little Bay)		Juveniles		X	X	
		Adults	X	X		
Blueback Herring (Oyster River)	SC-A1	Juveniles	X	X	X	
		Adults	X	X		
American Shad	SC-A1	Juveniles		X	X	
		Adults	X	X		

(continued)

Table 2. (cont).

Species	Designation*	Life Stage	Spring+	Summer+	Fall+	Winter+
Rainbow Smelt (Little Bay)	SC-A1	Juveniles	X	X	X	
		Adults	X			X
Sea Lamprey (Little Bay)		Juveniles	X			X
		Adults	X			
Essential Fish Habitat						
Atlantic Cod		Eggs	X		X	X
Atlantic Halibut		Eggs	X		X	X
		Spawning Adults	X		X	X
Bluefish		Juveniles		X	X	
		Adults			X	
Pollock		Larvae	X		X	X
White Hake		Eggs		X		
		Juveniles	X	X	X	
Windowpane Flounder		Eggs	X	X	X	X
		Larvae	X	X	X	X
		Spawning Adults	X	X	X	X
Winter Flounder		Eggs	X			X
		Larvae	X			
		Spawning Adults	X			X
Yellowtail Flounder		Larvae	X			

*Protected species designations:

E,E – NH Endangered, Federally Endangered

T – NH Threatened

SC – NH Species of Special Concern – A1 indicates species is Near-Threatened and susceptible to further decline; B indicates a Responsibility Species, with most of the population existing in NH.

+Spring = Mar-May, Summer = Jun-Aug, Fall = Sep-Nov, Winter = Dec-Feb

Fresh Water
Restriction Dates: None
Restricted Activity: Clearing
Regulatory Basis: State Endangered Species Act – Species of Special Concern
Description: Fish species in freshwater streams, such as the Oyster River and the perennial streams within the SRP corridor have the potential to be affected by habitat changes from clearing and site preparation. No direct impacts to the Oyster River or Longmarsh Brook are proposed, which are known to support the swamp darter and banded sunfish, respectively (both State Species of Special Concern), as well as diadromous fish (see Table 3). Clearing along the Oyster River and Longmarsh Brook will be minimized where practicable, and conducted by hand with climbing crews when unavoidable, with the purpose of minimizing disturbance to the stream banks and associated vegetation. American eel is also known to occur on LaRoche Brook, where temporary bridges are proposed to avoid stream impacts and allow unimpeded fish passage. The temporary bridge supports will be placed as far from the stream banks as possible to avoid bank disturbance. Shrubs and herbaceous vegetation plus root systems of cut trees will be left in place to further minimize stream bank disturbance along all streams where practicable.

Table 3. Seasons in which protected fish species and diadromous fish are likely to be found in freshwater habitats in the SRP area.

Species	Designation *	Life Stage	Spring+	Summer+	Fall+	Winter+
Protected Species						
Banded Sunfish	SC- A1B		X	X	X	X
Swamp Darter	SC-A1	Adults	X	X	X	X
Diadromous Fish						
Alewife (Oyster River)	SC-A1	Juveniles	X	X	X	
		Adults	X	X		
American Eel	SC-A1	Adults	X	X	X	X
Blueback Herring (Oyster River)	SC-A1	Juveniles	X	X	X	
		Adults	X	X		
American Shad	SC-A1	Adults	X	X		

(cont.)

Table 3. (Cont.)

Species	Designation *	Life Stage	Spring+	Summer+	Fall+	Winter+
Rainbow Smelt (Oyster River)	SC-A1	Adults	X			
Sea Lamprey (Oyster River)	SC-A1	Adults	X			

*Protected species designations:

E,E – NH Endangered, Federally Endangered

T – NH Threatened

SC – NH Species of Special Concern – A1 indicates species is Near-Threatened and susceptible to further decline; B indicates a Responsibility Species, with most of the population existing in NH.

+Spring = Mar-May, Summer = Jun-Aug, Fall = Sep-Nov, Winter = Dec-Feb

2.3 Botanical Resources

General Avoidance Measures

Restriction Dates: Follow these recommendations at all times
Restricted Activity: Clearing, Site Preparation, and Construction
Regulatory Basis: Permit Requirements

Description: General avoidance measures and best management practices apply throughout the Project to minimize impacts to botanical resources in general. Minimizing impacts to all plants and plant communities provides intact habitat systems to support threatened and endangered plants. These measures are also central to meeting the Project's wetland and stormwater permitting requirements.

General BMPs to Minimize Vegetation Impacts

- Limit removal of vegetation to that necessary for construction of the project.
- Limit tree clearing to the minimum required width to meet safety clearances, leave root systems in place, except over underground installations or where other earthwork must be conducted. Leave herbaceous and shrub vegetation intact wherever practicable.
- Where practicable, fell trees within the ROW to minimize the potential for off-ROW vegetation damage.
- Maintain vegetation along stream banks and within wetlands to the extent practicable.

- Control the spread of invasive plants:
  - Environmental Monitor will identify existing invasive species in the work area.
  - Train construction contractors to identify common invasive plant species.
  - Perform regular inspection and cleaning of construction equipment and vehicles on the right-of-way as appropriate where invasive species are present.
  - If invasive species are cut due to construction activity, cut when dormant or prior to seed set, and dispose of in a manner and location that precludes spread.
  - Use soil from local sources. To the extent possible, match soil texture with soil texture found in impacted habitat. Any soil fill or topsoil used will be inspected at the source and be certified as weed free by the Environmental Monitor before being brought on site.
  - Use certified weed and invasive-free straw bales for erosion and sediment control.
  - Re-vegetate disturbed areas quickly using seed mixes that are devoid of invasive species.
- Follow erosion control BMPs during construction. Sediment and erosion control plans will be developed that specify the types of BMPs necessary. Depending on the site, BMPs may include installation of silt fence, straw wattles, mulch/stump grinding berms, straw bales, or check dams, and covering bare soils with mulch, blown straw, bonded fiber matrix or fiber rolls to protect drainage ways and streams from sediment runoff.
- Use BMPs for minimizing soil rutting and compaction.

<u>General Vegetation Restoration BMPs</u>

- Revegetate disturbed areas in a timely manner once construction is complete in specific areas.
- When restoring impact areas without rare, threatened, or endangered (RTE) plant species, use NHB-approved native seed mixes . Seed mix should be selected based on site conditions (e.g., upland vs wetland) and should contain common native species associated with the impacted habitat.
- Perform post-construction inspection or monitoring in restored habitats for a period of two years following completion of construction activities in that location.

<u>Eelgrass (*Zostera marina*)</u>

- Conduct a field survey for eelgrass the summer before construction in a band approximately 500 feet to either side of the cable route (see final Eelgrass Monitoring Plan) .
- Review eelgrass mapping efforts since 2015 to evaluate changes in distribution in the vicinity of the project.

- Conduct cable installation to minimize suspended sediments (See Section 2.2 Fisheries, Little Bay section)

Endangered Plants and Exemplary Communities

Restriction Dates: Clear/construct in winter, over snow and frozen ground to extent practicable
Restricted Activity: Clearing, Site Preparation, and Construction
Regulatory Basis: State Endangered Species Act – Endangered Species /Exemplary Communities

Description: In addition to the general avoidance measures listed above, the following practices will be instituted to avoid impacts to rare species and communities wherever practicable.

General avoidance measures

- A contractor training program will be developed prior to construction activities to familiarize the crews with the locations, species and habitats that will require special consideration. This will be the responsibility of the Environmental Monitor or a qualified botanist.
- The Environmental Monitor will discuss threatened and endangered plant issues at the morning tailboard meetings with Contractors for work taking place in sensitive areas.
- Clear and construct in sensitive plant locations when the ground is frozen and snow cover is present, to the extent practicable.
- If clearing under frozen conditions is not practicable, no equipment or matting will be allowed within areas supporting the rare species.
- If construction takes place when the ground is not frozen, use elevated matting to cross any area of perennial RTE plants to minimize impacts.

Crested Sedge *(Carex cristatella)*

- Prior to construction, locations of known crested sedge will be resurveyed and flagged with coded flagging by a qualified botanist. Any newly discovered populations will be flagged for avoidance and reported to NHNHB. If avoidance of any populations is not possible, consult with NHNHB for recommendations.
- Fence any known sensitive areas adjacent to impact areas as needed to prevent impacts beyond the work zone, and install generic caution signs along construction access roads to mark areas of resource sensitivity.
- If project constraints require construction to be performed during the growing season, perform work after the species has set seed to the extent practicable.

- Approximately 60 square feet are currently anticipated to be temporarily impacted with an access road. Place access road on raised timber mats to minimize ground compaction.
- At the conclusion of construction, restore the native topsoil that was present prior to construction.
- Crested sedge seeds will be collected from the undisturbed population per guidance provided by NHNHB (see Crested Sedge Monitoring Plan (Appendix B)).
- Allow crested sedge location to reseed naturally without seed mix, unless directed by NHNHB to plant crested sedge seeds collected as described above.
- Implement long-term population monitoring according to the approved Crested Sedge Monitoring Plan (Appendix B).

Salt Marsh

- All work in salt marshes, including impacts and restoration, will be conducted according to the approved Salt Marsh Restoration Plan (Appendix C) and overseen by an Environmental Monitor
- Prior to construction, salt marsh limits and location of permitted work areas will be flagged with coded flagging by a qualified botanist.
- Fence any known sensitive areas adjacent to permitted work areas as needed to prevent impacts beyond the work zone, and install generic caution signs along construction access roads to mark areas of resource sensitivity.
- Implement long-term monitoring according to the Salt Marsh Monitoring Plan (Appendix C).

Attachment 1

Table A.1. Summary table by species and communities.

Species	Known Presence in Project Area?	TOY Restrictions	Restricted Activity	Avoidance & BMPs
Wildlife Species				
Bald Eagles	One known nestr within ¼ mile of project	March 1 – July 31	Clearing, Site Prep., Construction	Survey for active nests prior to Project initiation (clearing, site prep, construction); restrict project activities within 660 feet of nest.
Other Raptors	No known nests in or within ¼ mile of project	Generally April – July; May and August depending on species	Clearing, Site Prep., Construction	Survey for active nests prior to Project initiation (clearing, site prep, construction); restrict project activities near nests as applicable
Northern Long-eared Bat (NLEB)	No known, occupied hibernacula or maternity roost trees	June 1 – July 31	Clearing	Minimize tree clearing during restricted period to extent possible.
Northern Black Racer	No known hibernacula; likely present	Hibernacula: Oct 15 – Apr 30 General: April 15 – Oct 30	Clearing, Site Prep., Construction	Site searches prior to active construction and site prep activity; remove individuals as needed during construction
Blanding's & Spotted Turtles	Known in proximity to project; habitat present	April 15 – October 15	Clearing, Site Prep., Construction	Minimize in-wetland work; avoid/minimize wetland impacts; search for and remove indiviudals as needed during construction; site review for nesting areas and avoid the to the extent practicable

(continued)

Table A.1. (cont).

Species	Known Presence in Project Area?	TOY Restrictions	Restricted Activity	Avoidance & BMPs
New England Cottontail (NEC)	No known populations but habitat being managed for NEC	March 31 – June 21	Clearing	Minimize removal of brushy growth; hand cut or mow with "brontosaurus"-type equipment; leave stumps and roots for regrowth
Fisheries				
Little Bay Species	Confirmed or assumed listed and EFH species	Jan 1 – Jul 31	Underwater cable construction; cable removal	Timed construction window Sept 1 – Dec 31 to minimize impacts ; method allows for rapid installation; jetplow will occur over 3 days, each separated by a week; the associated sediment plume will be ephemeral and will affect only a percentage of the crossing at any given time; handjetting will be contained within silt curtains on tidal flats; where currents prohibit silt curtains on the east shore, handjetting will be limited to periods of low current during slack tides.
Freshwater Fish/Species	Assumed in Oyster River and Longmarsh and LaRoche Brooks	None	Clearing	Minimize clearing impacts near subject waters; direct impacts to/over Oyster River and Longmarsh Brook avoided; temporary bridges proposed for 2 crossings over LaRoche Brook.

(continued)

Table A.1. (cont).

Species	Known Presence in Project Area?	TOY Restrictions	Restricted Activity	Avoidance & BMPs
Botanical Resources				
Crested sedge (*Carex cristatella*)	Yes in specific patches in Durham ROW area	Growing Season	Clearing, Site Prep., Construction	Resurvey populations/patches; identify with fencing; avoid and use winter construction/clearing where possible; timber mat bridge where unavoidable for access road; natural reseeding and monitoring
Salt Marsh	Small patches near Durham/ Newington shores of Little Bay	Restoration complete by Nov. 1, or overwinter according to guidelines and plant in April.	Underground/underwater cable construction	Adhere to approved Salt Marsh Restoration Plan

Appendix A

Raptor Monitoring Plan

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Survey to Identify Raptor Nests in the SRP Project Area

A two-step survey will be used to identify raptor nests present in the vicinity of the Seacoast Reliability Project (SRP) corridor, if any, consisting of an initial helicopter survey in mid-February, followed by a foot survey during the first 10 days of May. The purpose of the helicopter survey is to detect existing nests from prior nesting seasons, as existing nests may be re-used, or may indicate an active territory where another nest is likely to be built nearby, and should therefore receive extra scrutiny during the foot survey. The purpose of the foot survey is to identify nests active during the current breeding season, and the timing is intended to coincide with active nesting behavior. Due to variation in nesting season among species likely to be present, the activity observed may vary from feeding nestlings to active nest building

Species potentially nesting in the project area include bald eagle, osprey, red-tailed hawk, red-shouldered hawk, broad-winged hawk, Cooper's hawk, sharp-shinned hawk, and American kestrel. If an active raptor nest is identified during either survey effort, a suitable buffer will be established around the nest and work limited in the buffer while the nest is active. Buffer size will follow the recommendations in *Good Forestry in the Granite State* (2010)[1], which advises temporarily limiting activities within 660 feet of raptor nests during the active nesting season, with adjustments to this initial distance based on of characteristics of the nest surroundings (e.g., topography, vegetation type and density) and the response of the resident birds to activity.

The helicopter survey will be conducted during the leaf off-season (February), to provide the best opportunity to observe existing raptor nests located in the forest canopy within and adjacent to the SRP right-of-way (ROW), as well as nests located on power line structures in the ROW. The survey will be conducted at the lowest safe and practical speed and elevation to maximize opportunities for the observer(s) to identify large stick nests in the forest canopy. Safety will be determined by the pilot, and practicality will be determined by a combination of creating a favorable line of sight for the observer(s) and minimizing disturbance to nearby residents.

Aerial nest surveys conducted outside of the bald eagle nesting season will have no risk of disturbing the known eagle nest in the vicinity of the project area. However, a study of bald eagles response to aircraft during the nesting season (Grubb and Bowerman 1997[2]) suggests that aerial surveys conducted early in the nesting season have a lower risk of causing disturbance to adults as compared to later, based on a February-June nesting period. Further, this study recommends helicopter surveys

[1] Bennett, Karen P. editor. 2010. Good Forestry in the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire (second edition). University of New Hampshire Cooperative Extension, Durham, N.H.

[2] Grubb, T., and Bowerman, W. 1997. Variations in breeding bald eagle responses to jets, light planes and helicopters. Journal of Raptor Res. 31 (3):213-222

of bald eagle nest be flown no closer than 150 m, for duration of less than one minute, with no more than one overhead pass. The proposed survey will not include the existing eagle nest, since the proposed survey will be conducted to identify previously unknown raptor nests, and this nest is already on record. The survey path will be a minimum of 200 m from the known nest, will not pass overhead of the nest and the helicopter will be present at this minimum distance for only seconds as it passes by. The risk of disturbing eagles at this nest, if present, appears to be very low.

The timing of the follow-up foot survey will coincide with the conclusion of broad-winged hawk migration and the beginning of their nesting season (first 10 days of May), when leaves are still small. Broad-winged hawks are the species most likely to be nesting in the project area and have the latest nest-initiation date of all the species potentially present; therefore, this survey will be properly timed to also identify other species present. This survey will be conducted by walking through mature forest cover areas within the SRP ROW and visually assessing suitable nest trees to identify this year's new nests, if any. Binoculars will be used to the greatest extent possible to minimize disturbance. This foot survey will focus on the parts of the ROW which have less development. Additionally, if any nests are located during the aerial survey, they will be re-checked to determine if they are being used by raptors during the 2019 nesting season.

Appendix B

Crested Sedge Monitoring and Restoration Plan

NORMANDEAU ASSOCIATES
Environmental Consultants

Public Service of New Hampshire
Seacoast Reliability Project

Crested Sedge Monitoring and Restoration Plan
FINAL

Durham to Newington, NH

Presented To:
Public Service Company of New Hampshire
780 North Commercial Street
Manchester, NH 03101

Submitted:
April 16, 2019

Submitted By:
Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

www.normandeau.com

Introduction

Public Service Company of New Hampshire d/b/a Eversource Energy ("PSNH") is proposing to construct a new 115 kilovolt ("kV") transmission line between their existing Madbury and Portsmouth substations to enhance the electric reliability in the seacoast region. The Seacoast Reliability Project ("SRP") is proposed to be located in the Towns of Madbury, Durham and Newington as well as the City of Portsmouth, in Strafford and Rockingham Counties, New Hampshire. The SRP transmission line will be approximately 12.9 miles long in an existing right-of-way (ROW).

PSNH has designed the SRP to avoid environmental impacts where possible. During surveys for rare species in 2013 and 2015, four subpopulations of crested sedge were identified within the ROW (see Rare, Threatened and Endangered Species and Exemplary Communities report (Normandeau 2016)). Three of the four locations will be avoided during construction. One location will potentially have 60 square feet of temporary impact due to the access road. A timber mat bridge will be used to minimize impacts, but the timber mat "pier" and shading are expected to impact some of the stand. The following text and plans describe the construction activities, protection efforts, restoration methods, and long-term monitoring to document recovery.

Proposed Protection and Restoration Plan

All construction and restoration will be done under the supervision of the Engineer and an Environmental Monitor to ensure minimization of impacts to crested sedge, and that all disturbed areas are stabilized.

The crested sedge subpopulations delineated in 2015 are depicted on the confidential construction maps as areas to avoid for the benefit of the contractor and the Environmental Monitor. The crested sedge stands will be revisited by a qualified botanist in 2019 to confirm the limits of the species with flagging. Seed will be collected from mature crested sedge plants according to the project-specific collection protocol developed by NHNHB (Attachment 1).

The contractors under the direction of the Environmental Monitor will establish a perimeter using construction fencing to exclude all construction activities from all crested sedge stands, except for the permitted impact. In the proposed impact area, the Environmental Monitor will oversee the construction of the timber mat bridge and place the "piers" to minimize impacts to crested sedge plants where possible (Figure 1). Construction fencing will be placed along the edge of the bridge to ensure no disturbance to the remainder of the stand.

At the end of the construction period in late 2019 or early 2020, the timber mat bridge will be removed and the impact area evaluated for restoration. If needed, the topsoil will be raked by hand to reduce compaction, and a light straw mulch applied if erosion is a concern. The native seedbank will be allowed to revegetate the area to encourage recolonization of crested sedge. No seed mix is proposed. The crested sedge seed collected at the beginning of the

project may be applied, after consultation with NHNHB as to the necessity, density and timing of seeding.

The Environmental Monitor will conduct two (2) years of post-construction monitoring, and prepare the appropriate compliance reports for submittal to NHDES. The monitoring will include a site inspection in the spring and late summer and after large storm events, and document growing season vegetation cover estimates by species, and photographs. Areas with less than 80% vegetation cover in late summer after Year 2 will require consultation with NH Natural Heritage Bureau for possible supplemental planting or other appropriate enhancements. Any areas with erosion will be repaired immediately. All construction fencing, stakes, and erosion control materials will be manually removed as soon as they are no longer necessary.

The restored crested sedge area will be monitored for invasive species. If found, invasive plants will be hand pulled, removed from the crested sedge restoration area and disposed of in a manner and location to preclude their survival or spread. A monitoring report will be submitted to NHDES and NHNHB by December 1 of each monitoring year.

Notes:

1. Locations of known rare plants will be resurveyed and flagged with coded flagging by a qualified botanist prior to site clearing and site preparation.
2. Populations of known RTE plants will be fenced where applicable to prevent unauthorized entry and disturbances.
3. The Environmental Monitor will discuss RTE plants as applicable at tailboard meetings and when contractors will be working in the vicinity of the known RTE plants
4. The Environmental Monitor will provide adequate training to contractors to assist with identification and avoidance of known rare species.
5. Clear and conduct site preparation activities in sensitive plant locations when the ground is frozen and snow cover is present, to the extent practicable.
6. If clearing and site preparation takes place when the ground is not frozen, use elevated construction matting where possible to cover the ground in the areas of perennial rare species to minimize impacts. See BMP #9: Swamp Mat Bridge in Best Management Practices Manual, Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire, dated October, 2018.
7. Approximately 60 square feet of a crested sedge population are currently anticipated to be temporarily impacted with an access road. Place access road on raised timber mats to minimize ground compaction.
8. At the conclusion of construction, restore the native topsoil that was present prior to construction.
9. Use BMPs to avoid and minimize compaction of surficial soil. At the conclusion of construction, restore the native topsoil that was present prior to construction.
10. Allow RTE plant locations to reseed naturally without seed mix, unless directed by NH NHB to collect seed from adjacent (un-impacted plants) for use during restoration.
11. Treat locations of rare, threatened and endangered species and their habitat as confidential. The identity and precise location of rare species will not be shown on drawings available to the public, but will be on plans and tables for use by contractors and the Environmental Monitor during construction.
12. The Project shall comply with vegetation management BMPs and TOY restrictions established by the NHNHB and described in Best Management Practices and Construction Plan for Protected Wildlife and Plants, dated September 15, 2017.

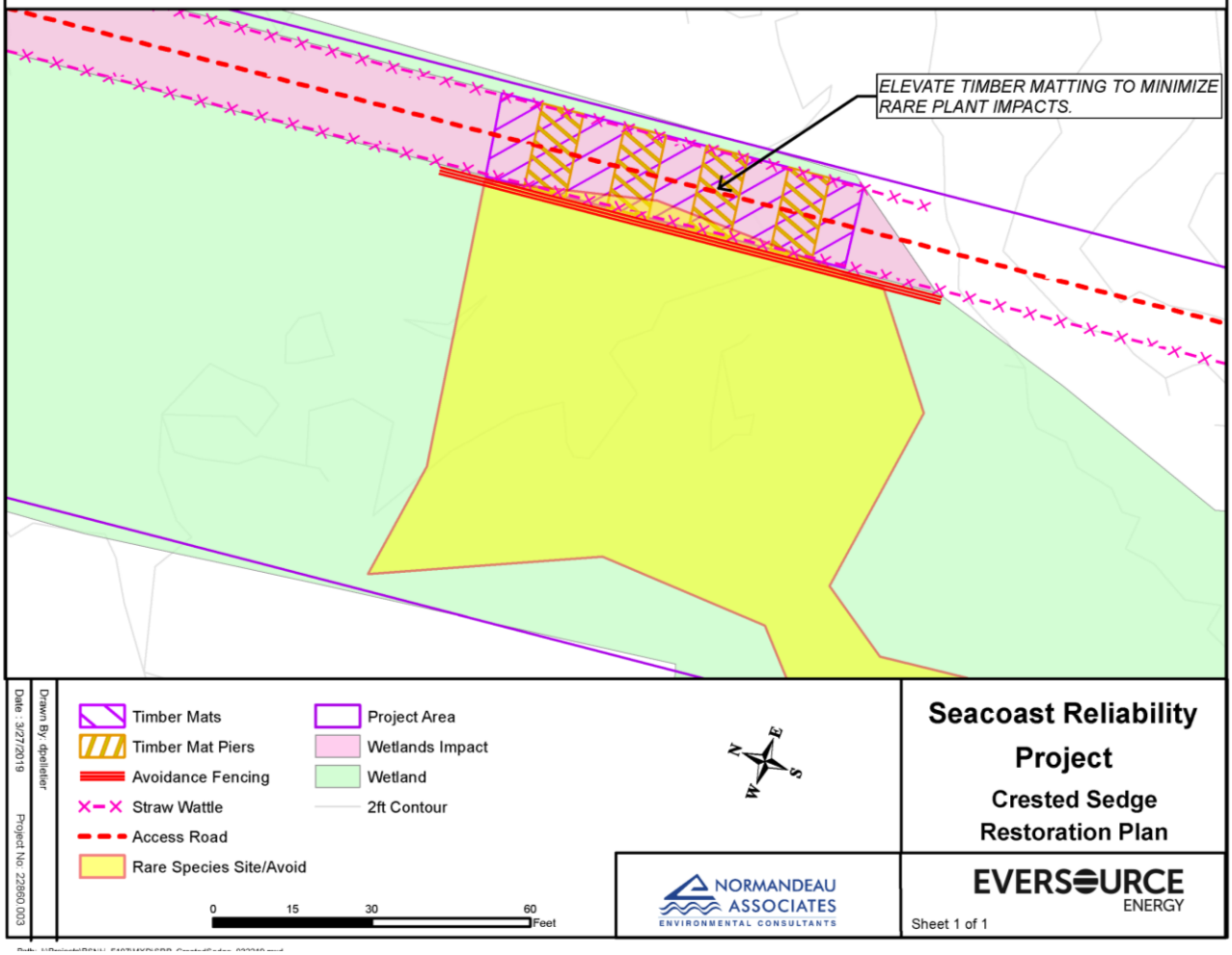

Figure 1. Crested sedge construction detail and restoration plan.

ATTACHMENT 1.

SRP CRESTED SEDGE SEED COLLECTION, STORAGE & PLANTING PROTOCOL

NEW HAMPSHIRE NATURAL HERITAGE BUREAU
DIVISION OF FORESTS & LANDS - DNCR
172 PEMBROKE ROAD, CONCORD, NH 03301
(603) 271-2214 WWW.NHDFL.ORG

To: Sarah Allen, Sr. Principal Wetland Scientist, Normandeau Associates, Inc.

From: Amy Lamb, Ecological Information Specialist, NH Natural Heritage Bureau

Date: April 15, 2019

Subject: Seacoast Reliability Project (SEC Docket 2015-04): Seed collection & redistribution protocol for crested sedge (*Carex cristatella*)

The following protocols have been developed by the NH Natural Heritage Bureau (NHB) for the Seacoast Reliability Project, as requested, relative to collecting and redistributing seed of crested sedge (*Carex cristatella*). These protocols have been developed in an effort to minimize impacts to crested sedge resulting from timber matting compaction during project construction. As referenced in the 3/29/2019 document entitled, "Seacoast Reliability Project Avoidance and Minimization: Best Management Practices and Construction Plan for Protected Wildlife and Plants FINAL," NHB is providing these protocols per the crested sedge Best Management Practices section:

> *"Allow crested sedge location to reseed naturally without seed mix,* ***unless directed by NHNHB to collect seed from adjacent (non-impacted plants) for use during restoration****."*

The literature was consulted to develop the protocols below; the published papers and other resources utilized are referenced at the end of the document.

Seed Collection and Dry Storage:

- Collect seeds at maturity (late July – early August).
- Utilize New England Wildflower Society seed collection guidance documents to collect an appropriate amount of seed from nearby populations that will not be impacted by the project.
- Document approximate numbers and GPS locations of seeds collected.
- Dry seeds in paper bags for 2 weeks.
- Remove any empty perigynia to increase percent viability of collected seed.
- Store dry seeds in paper bags in a cool (stable temperature), dry, dark place until ready to stratify.

Moist Cold Stratification

- Place seeds in filter paper; fold to form packets.
- Place seed packets in moist, sterilized soil media. Water should not drip out of media when squeezed.
- Place soil media in refrigerator at 33-40° F.
- Check moisture of media periodically and add a small amount of water as needed to maintain moisture content as specified above.
- Cold stratify for at 8 weeks for optimal germination.

Germinating Seeds On-Site

- Day length of 14 hours optimal for germination (after May 1).
- Remove mulch or thatch from site where seeds distribution will occur. Remove any competing vegetation in area to be restored. This will ensure that adequate light will reach the seeds for germination.
- If area is not moist, apply water using light-pressure hose, watering can, or other light-pressure watering apparatus. Broadcast seeds carefully in area to be restored. Make sure that seeds make good contact with soil to avoid drying.
- Document approximate numbers and GPS locations of seeds distributed.

Maintenance:

- Check seeded areas periodically, especially if drought conditions. Apply water as needed, as described above. Remove any invasive plant species as needed.
- Monitor as part of already established rare species and DES wetlands monitoring as required by the project.

Should you have any questions regarding anything contained herein, please contact me at Amy.Lamb@dncr.nh.gov or (603) 271-2834.

References:

Houseal, Greg (2010). Propagation and agronomic seed increase of native sedges (*Carex*). Proceedings of the 22nd North American Prairie Conference: restoring a national treasure 199-203. https://tallgrassprairiecenter.org/sites/default/files/pdfs/houseal.pdf

Kettenring, KM., Gardner G., Galatowitsch, S.M. (2006). Effect of light on seed germination of eight wetland *Carex* species. Annals of Botany 98: 869-874. https://doi.org/10.1093/aob/mcl170

Larson, J.L. (1997). Factors influencing germination of six wetland *Cyperaceae*. Field Station Bulletin 30(1): 1-9. https://dc.uwm.edu/cgi/viewcontent.cgi?referer=http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=17&ved=2ahUKEwiYyJajp9LhAhWkneAKHXwnC4QQFjAQegQIARAB&url=http%3A%2F%2Fdc.uwm.edu%2Fcgi%2Fviewcontent.cgi%3Farticle%3D1160%26context%3Dfieldstation_bulletins&usg=AOvVaw16jTPIKFV0D3Tq6aKPPYw8&httpsredir=1&article=1160&context=fieldstation_bulletin

Germination Instructions for Seeds. Prairie Moon Nursery, Pages 1-21. https://laketoprairie.wildones.org/wp-content/uploads/sites/12/2015/04/Seed-Germination-Instructions.pdf

Kettenring, K.M., Galatowitsch, S.M. Tools for *Carex* revegetation in freshwater wetlands: understanding dormancy loss and germination temperature requirements. Plant Ecol (2007) 193:157–169. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.490.7891&rep=rep1&type=pdf

Time and Date AS (1995-2019). 2019 Sun Graph for Concord. https://www.timeanddate.com/sun/usa/concord

US Climate Data (2019). Climate Durham - New Hampshire. https://www.usclimatedata.com/climate/durham/new-hampshire/united-states/usnh0057

Planting and Maintenance Recommendations for Wetland Restoration and Buffer Projects. Minnesota Board of Water & Soil Resources. Accessed 15 April 2019. http://www.bwsr.state.mn.us/native_vegetation/planting-maintenence-recs.pdf

Appendix C

Salt Marsh Protection and Restoration Plan

NORMANDEAU ASSOCIATES
Environmental Consultants

Public Service of New Hampshire
Seacoast Reliability Project

Salt Marsh Protection and Restoration Plan
FINAL

Durham to Newington, NH

Presented To:
Public Service Company of New Hampshire
780 North Commercial Street
Manchester, NH 03101

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Introduction

Public Service Company of New Hampshire d/b/a Eversource Energy ("PSNH") is proposing to construct a new 115 kilovolt ("kV") transmission line between their existing Madbury and Portsmouth substations to enhance the electric reliability in the seacoast region. The Seacoast Reliability Project ("SRP") is proposed to be located in the Towns of Madbury, Durham and Newington as well as the City of Portsmouth, in Strafford and Rockingham Counties, New Hampshire. The SRP transmission line will be approximately 12.9 miles long, including a 0.9 mile crossing under Little Bay. The cable crossing proposed in Little Bay will affect a corridor approximately 100 feet wide within a charted Cable Area approximately 1,000 feet wide.

PSNH has designed the SRP to avoid environmental impacts where possible. Temporary impacts to fringing salt marsh are unavoidable on both the east and west shores of Little Bay. Impacts will result from timber mat placement to allow construction equipment to cross the marsh to reach the work areas, and from burial of the cables underneath the marsh. The latter effort will require salvage of the existing peat where feasible, and replacement of the peat and salt marsh restoration after the cable burial is completed. The following text and plans describe the existing conditions, construction activities, salt marsh protection and restoration methods, and long-term monitoring to document recovery.

Proposed Protection and Restoration Plan

All construction and restoration will be done under the supervision of the Engineer and an Environmental Monitor to ensure minimization of impacts to native vegetation and wildlife, and that all disturbed areas are stabilized. All salt marsh salvage and restoration will be conducted by a contractor experienced in salt marsh restoration, and overseen by the Environmental Monitor.

Because of variable conditions in these fringing marshes, the vegetated portions of the marsh within the impact area will be delineated to capture this year's conditions. Areas that appear capable of supporting salt marsh (evidence of roots and rhizomes but unvegetated at the time of delineation) will also be considered for restoration.

The attached plan set depicts areas of the salt marsh delineated in 2016 that will be temporarily impacted by the underwater cable installation. At a minimum, the marsh will be restored to the extent and elevations identified in the 2019 delineation. On the west shore, the Applicant is also proposing to re-establish an additional 461 sq.ft. of salt marsh after the cable installation is complete (Sheet 2). This re-establishment area appears to be former salt marsh as defined by the extent of boulders to the north of the work corridor. The boulders appear to have been artificially placed on the marsh surface, potentially during either the original cable construction in the early 1900's or during repairs in the 1940's or 1970's. Substrates under the re-establishment area appear to be rocks, and unconsolidated silts, sands and gravels.

Prior to construction, the work areas on the east and west shores will be bounded with temporary fencing to confine construction equipment and staff to the impact area, and to prevent damage to the adjacent marsh. Erosion controls along the upland edge will be put in place to prevent disturbed soils from migrating into the saltmarsh during the work period. Straw wattles will be used to protect any exposed faces of the remaining marsh from erosion. Once installed, the turbidity curtain surrounding the hand jet area will also protect the disturbed salt marsh behind it. Within the work area, timber mats underlain by geotextile will be used to protect the marsh from equipment and foot traffic. Excavation in the marsh will be limited to only the area necessary for burying the cables. Matting and excavation will occur over the briefest time period possible to limit impacts to the salt marsh. In the excavation areas, all suitable salt marsh peat will be salvaged and stockpiled for replacement during restoration. Suitable peat will be determined in the field by the Environmental Monitor and will be thick enough (minimum 6 inches) and intact enough (minimum 4 square feet) to tolerate salvaging, storing and re-planting. In areas where the salt marsh is unsuitable for salvaging as determined by the Environmental Monitor, the marsh will be replanted as described below.

The salvaged peat blocks will be protected from sun, wind, dehydration and freezing in a nearby suitable upland area with a hay bed, sides and loose top. The peat blocks will be checked weekly during the growing season and kept moist with fresh water as needed. Salt water will be applied monthly to maintain the salinity tolerance of the salvaged material. The construction work in the salvage area is expected to be completed with sufficient time to replace the salvaged peat blocks no later than November 1. If the cable installation period extends beyond November 1, the peat blocks will be maintained through the winter with additional bedding and a well-ventilated shelter to protect the plants from extreme cold and warming. The plants will be relocated to the salt marsh in April of the following year.

Upon completion of construction, the underlying substrates will be restored to appropriate subgrades to support either the peat blocks or salt marsh planting, so that final elevations are equal to or up to six inches higher than the pre-construction condition. Where the peat was suitable for salvaging, the peat blocks will be replaced and anchored with stakes driven into the substrates and/or adjacent peat. Any open interstices between the peat blocks will be filled with a clean sandy loam to cover exposed roots and maintain grades. Additional salt marsh cordgrass (*Spartina alterniflora*) will be planted in the interstices if the gap between peat blocks exceeds 4 inches. Planting of cordgrass will not occur until the spring of 2020.

In areas where the peat was unable to be salvaged, the substrates will be restored with a clean sandy loam, and overlain with a biodegradable erosion control blanket if needed to stabilize the sediments. In the spring, the marsh will be replanted at a maximum of 1 sq.ft. intervals with salt marsh cordgrass seedlings in low marsh areas, and salt marsh hay (*Spartina patens*) seedlings in high marsh areas if needed and as determined by the Environmental Monitor. The seaward face of the restored marsh will be protected from ice and wave action with coir logs. This may include placing several boulders in the intertidal zone below the re-establishment area as protection from wave and ice scour.

In the re-establishment area, clean sandy loam will be placed to elevations consistent with the salt marsh bordering the re-establishment area. If recommended by the Environmental Monitor, the substrates will be overlain with a biodegradable erosion control blanket to protect from from wave action. The marsh will be replanted with salt marsh cordgrass seedlings as directed by the Environmental Monitor. The seaward face of the re-established marsh will be protected from ice and wave action with coir logs secured with wooden stakes or rebar, and rocks placed seaward of the marsh area (Sheet 3).

The Environmental Monitor will assure compliance with permit conditions during and after the construction activities, including five (5) years of post-construction monitoring, and preparation of the appropriate compliance reports for submittal to NHDES. The monitoring will include a site inspection in the spring and late summer and after large coastal storm events, growing season vegetation cover estimates by species, and photographs. Areas with less than 80% vegetation cover in late summer of the first year (2020) will require additional planting or other appropriate enhancements. Any areas with erosion will be repaired immediately. All construction fencing, stakes, and erosion control materials will be manually removed as soon as they are no longer necessary.

The restored salt marsh areas will be monitored for invasive species. Potential invasive species will be primarily common reed (*Phragmites australis*). Common reed has not been observed in the vicinity of the work areas, so the likelihood of invasion is relatively low. If found, invasive plants will be hand pulled and removed from the salt marsh restoration areas and disposed of in a manner and location to preclude their survival or spread. A monitoring report will be submitted to NHDES and NHNHB by December 1 of each monitoring year.

ATTACHMENT 1:

Salt Marsh Restoration Plan

Sheets 1 through 4

1)All construction and restoration will be done under the supervision of the Engineer and an Environmental Monitor.

2)All salt marsh salvage and restoration will be conducted by a contractor experienced in salt marsh restoration, and overseen by the environmental monitor.

3)Prior to construction, the work areas will be bounded with temporary fencing to confine construction equipment and staff to the impact area, and to prevent damage to the adjacent marsh.

4)Erosion controls along the upland edge will be put in place to prevent disturbed soils from migrating into the saltmarsh during the work period.

5)Within the work area, timber mats will be used to minimize impacts to the marsh from equipment and foot traffic.

6)Excavation in the marsh will be limited to only the area necessary for burying the cables.

7)Matting and excavation will occur over the briefest time period possible to limit impacts to the salt marsh.

8)In the excavation areas, all suitable salt marsh peat will be salvaged and stockpiled for replacement during restoration. Suitable peat will be defined in the field by the Environmental Monitor, but will be thick enough (6 inches) and intact enough (4 square feet) to tolerate salvaging, storing and re-planting.

9)The salvaged peat blocks will be protected from sun, wind, dehydration and freezing in a suitable upland area

10)Construction in the salvage area will be completed with sufficient time to replace the salvaged peat blocks no later than November 1. If the construction period extends beyond November 1, the peat blocks will be maintained as described in #9 through the winter and replaced in April of the following year, or as directed by the Environmental Monitor.

11)Upon completion of construction, the underlying substrates will be restored to appropriate subgrades to support the peat blocks, so that final elevations are equal to or up to six inches higher than the pre-construction condition.

12)The peat blocks will be replaced and anchored with rebar stakes driven into the substrates and/or adjacent peat. Any open interstices between the peat blocks will be filled with a sandy loam to cover exposed roots and maintain grades. Additional salt marsh cordgrass (Spartina alterniflora) seedlings will be planted in the interstices if the gap between peat blocks exceeds 4 inches.

13)In areas where the salt marsh does not have fully established peat as described in #8, the marsh will be replanted at 1 sq.ft. intervals with salt marsh cordgrass seedlings in low marsh areas, and salt marsh hay (Spartina patens) seedlings in high marsh areas as designated by the Environmental Monitor.

14)In the replanting areas, the substrates will be restored with a sandy loam,and overlain with biodegradable erosion control blanket or otherwise protected to stabilize the sediments. Surface elevations will match preconstruction conditions or as directed by the Environmental Monitor. The seaward face of the restored marsh will be protected from ice and wave action with coir logs.

15)In the salt marsh re-establishment area on the west shore, the boulders will be removed from the intertidal zone and placed in an approved location under the direction of the Environmental Monitor. This may include placing several rocks in the intertidal zone below the re-establishment area as protection from wave and ice scour.

16)Final grades will be re-established to elevations consistent with the bordering low salt marshes north and south of the re-establishment area. The sandy loam will be overlain with a biodegradable erosion control blanket, or otherwise protected to stabilize the sediments.

17)The re-established marsh will be replanted with salt marsh cordgrass seedlings at 1sq.ft intervals.

18)The seaward face of the re-established marsh will be protected from ice and wave action with coir logs, and rocks placed seaward of the marsh area (see note 15).

19)All construction fencing and erosion control materials will be manually removed as soon as they are no longer necessary.

20) The Environmental Monitor will assure compliance with permit conditions during and after the construction activities, including five (5) years of post-construction monitoring, and preparation of the appropriate compliance reports for submittal to NHDES.

Date : 4/18/2019

Drawn By: dpelletier

Project No: 22860.003

EVERSOURCE ENERGY

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Sheet 1 of 4

Path: J:\Projects\PSNH_F107\MXD\SRP_SRP_SaltMarsh_Notes.mxd

DNW2 E2US

DNW2 E2RS

Remove boulders and re-establish salt marsh (461 sq. ft.)

Representative placement of rocks to protect the restored salt marsh

DNW2 E2US

Temporary timber mats (568 sq. ft. to be restored)

DNW2 E2EM

Cable house to be removed and restored

A'

A

Salvage and restore low marsh (390 sq. ft.)

DNW2 E2RS

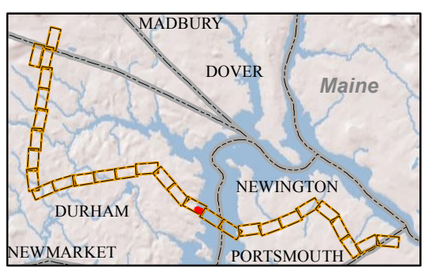
Turbidity Barrier
Straw Wattle
2ft Contour
Underground Cable
Tree Clearing
Timber Mats (to be restored)
Workpad/Access
Wetland

Concrete Mattresses
Temporary Impact
High Marsh Zone
Low Salt marsh
Salvage and restore low marsh
Boulders
808 Rocks

N
E
W
S

0 10 20 40 Feet

1 inch = 20 feet



Date : 4/17/2019

Drawn By: dpelletier

Project No: 22860.003

EVERSOURCE ENERGY

Seacoast Reliability Project
Salt Marsh Restoration Plan

Sheet 2 of 4

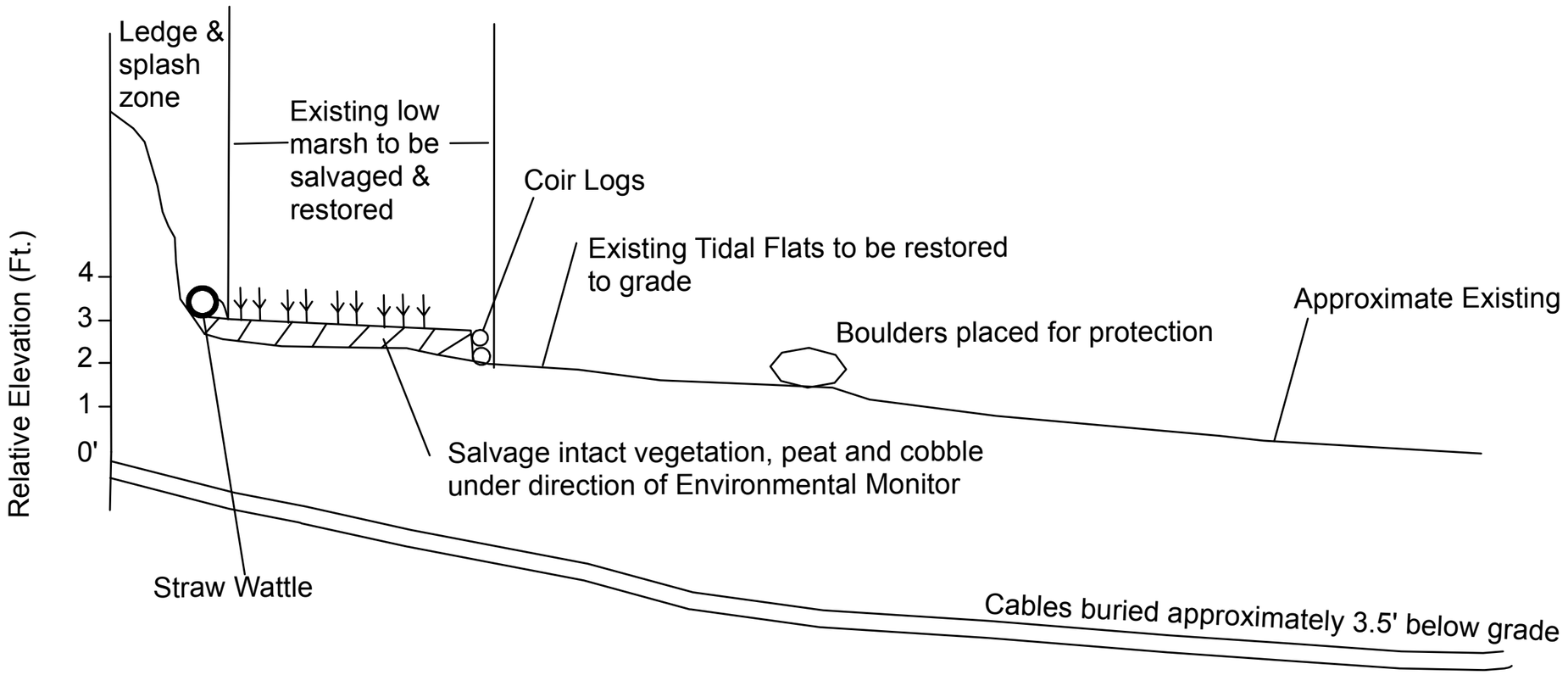
NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST
3/7/19

Path: J:\Projects\PSNH_F107\MXD\SRP_SaltMarsh.mxd

Salt Marsh Restoration Area, West Shore

Section A-A'



Drawn By: dpelletier

Date : 3/27/2019

Project No: 22860.003

EVERSOURCE ENERGY

Seacoast Reliability Project

Salt Marsh Restoration Representative Cross-Section

Sheet 3 of 4

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Path: J:\Projects\PSNH_F107\MXD\SRP_SaltMarsh_Xsect.mxd

Man Hole

Salvage & restore low marsh (615 sq. ft.)

DNW2
E2EM

DNW2
E2RS

DNW2
E2US

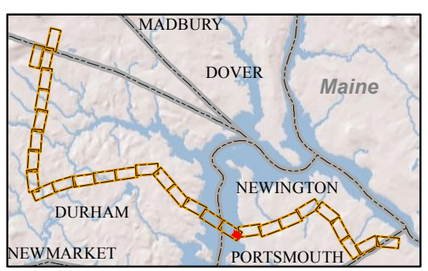
DNW2
E2EM

Turbidity Barrier
Silt Fence, Hay Bale, Erosion Control Mix Berm
Straw Wattle
2ft Contour
Underground Cable
Tree Clearing
Workpad/Access
Wetland

Concrete Mattresses
Temporary Wetland Impact
Low Salt marsh
Salvage and restore low marsh

0 10 20 40 Feet

1 inch = 20 feet



Date : 4/17/2019

Drawn By: dpelletier

Project No: 22860.003

EVERSOURCE ENERGY

Seacoast Reliability Project Salt Marsh (East) Restoration Plan

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST
3/5/19

Path: J:\Projects\PSNH_F107\MXD\SRP_SaltMarsh_East.mxd