NORMANDEAU ASSOCIATES
Environmental Consultants

Public Service Company of New Hampshire
Seacoast Reliability Project

Madbury, Durham, Newington & Portsmouth, NH

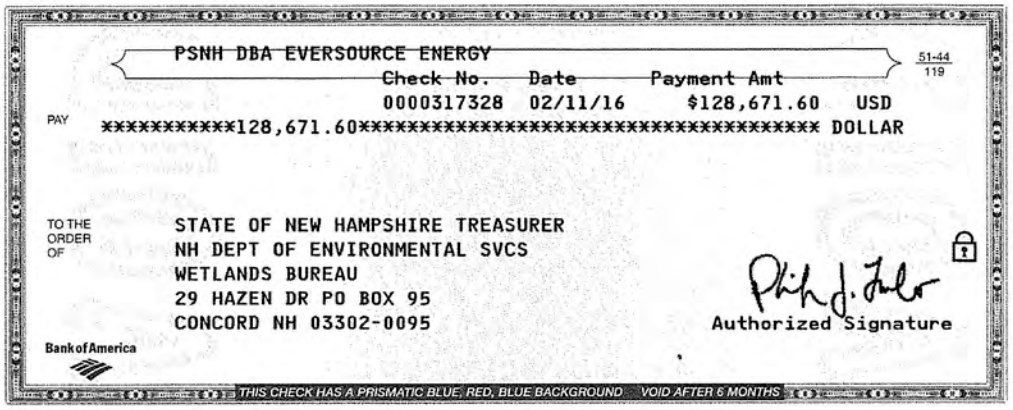
New Hampshire Department of Environmental Services
Wetlands Permit Application

Prepared For:
Public Service Company of New Hampshire
d/b/a Eversource Energy
780 North Commercial Street
Manchester, NH 03101

Submitted:
April 12, 2016

Prepared By:
Normandeau Associates, Inc.
25 Nashua Rd
Bedford, NH 03110

www.normandeau.com



PSNH DBA EVERSOURCE ENERGY

51-44
119

Check No.	Date	Payment Amt	
0000317328	02/11/16	$128,671.60	USD

PAY **********128,671.60********** DOLLAR

TO THE ORDER OF
STATE OF NEW HAMPSHIRE TREASURER
NH DEPT OF ENVIRONMENTAL SVCS
WETLANDS BUREAU
29 HAZEN DR PO BOX 95
CONCORD NH 03302-0095

Authorized Signature

Bank of America

THIS CHECK HAS A PRISMATIC BLUE, RED, BLUE BACKGROUND VOID AFTER 6 MONTHS

⑈317328⑈ ⑆011900445⑆ 000000070681⑈

AD6266-8 REV. 2-15 ATTACHED CHECK ISSUED AS FULL PAYMENT OF ITEMS BELOW. PLEASE DETACH STUB AND DEPOSIT CHECK PROMPTLY.

Vendor ID	Personnel ID	Check No.	Date
SONH	45	0000317328	02/11/16

Payor: PSNH DBA EVERSOURCE ENERGY

Date	Invoice No.	PO/Cntrct	Rel	Payment Amount	Cur
02/05/16	02082016B			$128,671.60	USD

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Appendix D: Biological Assessment for the Northern Long-eared Bat for the Seacoast Reliability Project

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Note: Items are numbered according to the NH DES "Wetlands Permit Application Required Information" document Revised 1-2016[1]

1-3 NH DES Wetlands Permit Application Form

[1] http://des.nh.gov/organization/divisions/water/wetlands/categories/forms.htm

NHDES-W-06-012

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. Refer to Guidance Document A for instructions.

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

2. PROJECT LOCATION:
Separate applications must be filed with each municipality that jurisdictional impacts will occur in.

ADDRESS: **Multiple - Linear Transmission Line ROW - See USGS Map(s)** TOWN/CITY: **Multiple - See Maps**

TAX MAP: **Multiple - See Att.** BLOCK: LOT: UNIT:

USGS TOPO MAP WATERBODY NAME: **Multiple - See Mapping** ☐ NA STREAM WATERSHED SIZE: **Various** ☐ NA

LOCATION COORDINATES (If known): **43 6'29.33" N, 70 52'35.96" W** ☒ Latitude/Longitude
☐ UTM ☐ State Plane

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

The Seacoast Reliability Project (SRP) will include construction of a new 12.9 mile long 115-kilovolt (kV) transmission line within an existing distribution line ROW between the existing PSNH Madbury and Portsmouth substations. The project includes new overhead and underground/submarine segments in Madbury, Durham, Newington and Portsmouth. The SRP will enhance the reliability of PSNH's delivery system for the seacoast area.

4. SHORELINE FRONTAGE

☐ NA This lot has no shoreline frontage. SHORELINE FRONTAGE: **240 LF within ROW**

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.

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

SEC App. for Cert. of Site and Facility, NHDES Shoreland, 401, AoT, & others. See SEC App for list.

6. NATURAL HERITAGE BUREAU & DESIGNATED RIVERS:
See the Instructions & Required Attachments document for instructions to complete a & b below.

a. Natural Heritage Bureau File ID: NHB **15** - **3561** .

b. ☒ Designated River the project is in ¼ miles of: **Oyster River & Lamprey River Watershed** ; and date a copy of the application was sent to the Local River Management Advisory Committee: Month: __ Day: __ Year: ____
☐ NA

7. APPLICANT INFORMATION (Desired permit holder)

LAST NAME, FIRST NAME, M.I.: **Nelson, Kurt I.**

TRUST / COMPANY NAME: **Public Service Company of New Hampshire d/b/a Eversource Energy, Inc.**

MAILING ADDRESS: **13 Legends Drive**

TOWN/CITY: **Hooksett** STATE: **NH** ZIP CODE: **03106**

EMAIL or FAX: **kurt.nelson@eversource.com** PHONE: **603-634-3256**

ELECTRONIC COMMUNICATION: By initialing here: **KIN**, I hereby authorize NHDES to communicate all matters relative to this application electronically

8. PROPERTY OWNER INFORMATION (If different than applicant)

LAST NAME, FIRST NAME, M.I.:

TRUST / COMPANY NAME:

MAILING ADDRESS:

TOWN/CITY: STATE: ZIP CODE:

EMAIL or FAX: PHONE:

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

9. AUTHORIZED AGENT INFORMATION

LAST NAME, FIRST NAME, M.I.: **Allen, Sarah**

COMPANY NAME: **Normandeau Associates, Inc.**

MAILING ADDRESS: **25 Nashua Road**

TOWN/CITY: **Bedford** STATE: **NH** ZIP CODE: **03110**

EMAIL or FAX: **sallen@normandeau.com** PHONE: **603-637-1158**

ELECTRONIC COMMUNICATION: By initialing here **SA**, I hereby authorize NHDES to communicate all matters relative to this application electronically

10. 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 be reviewed for the presence of historical/ archeological resources.
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 New Hampshire Department of Environmental Services is a criminal act, which may result in legal action.
11. I am aware that the work I am proposing may require additional state, local or federal permits which I am responsible for obtaining.
12. The mailing addresses I have provided are up to date and appropriate for receipt of NHDES correspondence. NHDES will not forward returned mail.

Property Owner Signature	Print name legibly	Date
Kurt I. Nelson	KURT I. NELSON	4/15/2016

MUNICIPAL SIGNATURES

11. 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 reviewed in the standard review time frame.

12. 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.

⇨ Town/City Clerk Signature	Print name legibly	Town/City	Date
Katherine K Cornell	Katherine K Cornell	Madbury	04/11/2016

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.

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⇨		

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Town/City Clerk Signature	Print name legibly	Town/City	Date
⇨ Barbara Landgraf	BARBARA LANDGRAF	Durham	4/11/16

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⇨ Town/City Clerk Signature	Print name legibly	Town/City	Date
Ann Beebe Deputy	Ann Beebe	Newington	4/12/16

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Town/City Clerk Signature	Print name legibly	Town/City	Date
Kelli L Barnaby	Kelli L. Barnaby	Portsmouth	4-11-16

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13. IMPACT AREA:
For each jurisdictional area that will be/has been impacted, provide square feet and, if applicable, linear feet of impact
Permanent: impacts that will remain after the project is complete.
Temporary: impacts not intended to remain (and will be restored to pre-construction conditions) after the project is complete.

JURISDICTIONAL AREA	PERMANENT Sq. Ft. / Lin. Ft.		TEMPORARY Sq. Ft. / Lin. Ft.	
Forested wetland	23	☐ ATF	4517	☐ ATF
Scrub-shrub wetland	503	☐ ATF	229944	☐ ATF
Emergent wetland	205	☐ ATF	48661	☐ ATF
Wet meadow	61	☐ ATF	19811	☐ ATF
Intermittent stream	0	☐ ATF	0	☐ ATF
Perennial Stream / River	0 / 0	☐ ATF	166 / 59	☐ ATF
Lake / Pond	0 / 0	☐ ATF	1120 / 0	☐ ATF
Bank - Intermittent stream	0 / 0	☐ ATF	0 / 0	☐ ATF
Bank - Perennial stream / River	0 / 0	☐ ATF	see above / 118	☐ ATF
Bank - Lake / Pond	0 / 0	☐ ATF	see above / 70	☐ ATF
Tidal water	5336 / n/a	☐ ATF	271984 / n/a	☐ ATF
Salt marsh	0	☐ ATF	1222	☐ ATF
Sand dune	0	☐ ATF	0	☐ ATF
Prime wetland	31	☐ ATF	38597	☐ ATF
Prime wetland buffer	n/a	☐ ATF	n/a	☐ ATF
Undeveloped Tidal Buffer Zone (TBZ)	0	☐ ATF	0	☐ ATF
Previously-developed upland in TBZ	11	☐ ATF	21166	☐ ATF
Docking - Lake / Pond	n/a	☐ ATF	n/a	☐ ATF
Docking - River	n/a	☐ ATF	n/a	☐ ATF
Docking - Tidal Water	n/a	☐ ATF	n/a	☐ ATF
TOTAL	6170 / 0		637188 / 247	

14. 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) **643,358** sq. ft. X $0.20 = $ **128,671.60**

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 = $ **n/a**

Total = $ **128,671.60**

The Application Fee is the above calculated Total or $200, whichever is greater = $ **128,671.60**

4 Pre-Application Notes

A list and copy of the relevant pre-application correspondence and meeting minutes is included below.

This includes minutes from the following eight meetings, and an email exchange:

1. Pre-application Meeting (NH DES, Corps, US EPA, US FWS, NMFS, NH F&G, DRED-NHB) – 1/6/15
2. Pre-application Meeting (NH DES Wetlands) – 3/4/15
3. Pre-application Meeting with Marine Agencies (NMFS, US EPA, NH DES, Corps) – 3/4/15
4. Pre-application Meeting NH F&G (NH F&G) – 5/7/15
5. Pre-application Meeting Corps/NHDES (NH DES, Corps) – 6/12/15
6. Pre-application Meeting NHNHB (NHNHB – 8/12/15
7. Aquaculture Meeting (Oyster farmers, NHF&G) – 9/18/15
8. Pre-application Meeting (NHDES, NHNHB, USACE, NOAA, USEPA, USFWS) – 1/12/16
9. Emails introducing project to NHDES Shellfish Program and Coastal Oil Spill Response operations, and others at Portsmouth Regional Office (2/19/16)

In addition, as requested in Block 5 of the Wetlands Permit Application form (see above), a list of the related permits and other authorizations required on behalf of the Project is also included. More detailed information is also included as a part of the NH SEC Application.

1. Joint NHDES/USACE Wetlands Permit Application
2. NH DES Section 401 Water Quality Certification Request
3. NH DES Shoreland Permit Application
4. NH DES Alteration of Terrain Permit Application
5. NH Department of Transportation Applications
    a. Use and Occupancy Agreement(s)
    b. Aerial utility permit application(s)
    c. Excavation (trench) permit application(s)
    d. Turnpike encroachment agreement application(s)
6. Request for the Site Evaluation Committee to Grant Approvals for Overhead Municipal Road Crossings and to Excavate in Municipal Roads

7. NH PUC Water Crossing License Applications[1]
    a. Construct and Maintain Electric Lines, Static Wires and Fiber Optic Cable Over and Across The Oyster River and Pickering Brook and under Little Bay in the Towns of Durham and Newington, New Hampshire

[1] Along with the Application for a Certificate of Site and Facility, the Applicant will contemporaneously submit two petitions for licenses with the New Hampshire Public Utilities Commission, namely, for approval to construct and maintain electric transmission lines, static wires, and fiber optic cables over and across public waters and lands of the State.

NORMANDEAU environmental consultants

CONFIDENTIAL

January 12, 2015

TO: Seacoast Reliability Project Team
FROM: Sarah Allen
SUBJECT: Summary of Agency Pre-Application Meeting

Meeting Location & Date: DES, Concord, NH, January 6, 2015

Attendees: Dave Keddell (Corps), Mark Kern (EPA), Maria Tur (FWS), Sue Tuxbury (NMFS), Ridgely Mauck (DES AoT), Collis Adams (DES Wetlands), Chris Williams (DES Coastal Program), Tim Drew (DES Info/SEC), Cheri Patterson (NHF&G), Melissa Coppola (DRED-NHB), Michael Pacy, Joe Sperry, Laura Games (all PSNH), Ann Pembroke and Sarah Allen (Normandeau, recording)

Sarah and Ann gave an overview of the project using the attached slides.

Comments/questions about land-based discussions

1. Melissa – is this project under the 5 year maintenance (clearing) plan? *Response:* we described the existing narrow (60') corridor clearing and that the remainder of the ROW will be cleared to 100' or limit of easement, if less than 100'.
2. Maria – northern long-eared bat is currently being evaluated for ESA listing with a decision likely in April. This species is thought to be more abundant along the coast. Tree clearing is a potential concern for this species. She wants to know the extent of upland and wetland tree clearing. *Response*: the project will provide in permit application.
3. Melissa – the slide described some vegetation communities as "not confirmed" – is that because they were outside the corridor? *Response*: a search did not find them in the corridor.
    a. When were surveys done for the plants? *Response:* surveys for most species were conducted during the season when the plants were in identifiable condition; we missed the appropriate season for small

whorled pogonia and will be going back out in 2015. Melissa recommended that we search for it in late May-early June.

b. How did the project eliminate habitat potential for various plants? Department considers that if habitat is identified in one spot, the potential is there for the habitat to occur in nearby locations. *Response*: Normandeau will clarify with botanist and describe in report.

4. Maria – will we be able to provide total acreages of clearing, etc.? Is it all within the ROW? *Response:* Yes to both.
5. Cheri – can the project leave thermal buffers for perennial streams? *Response*: PSNH can leave tall shrubs along stream banks, but no trees within cleared corridor
6. Maria – monarch butterfly is currently a species of interest for habitat enhancement along utility ROWs. FWS could be interested in partnering with the project on this. *Response:* the project team will discuss but sounds reasonable.
7. Collis – vernal pool survey – it seems unusual for the length of the project to have no vernal pools. Are you confident in your survey? *Response*: yes.
8. Collis – conversion of forested to open land is probably a good candidate for in-lieu fee mitigation. Response: Yes, except that the towns of Durham and Newington (largest impacts) may want to pursue local mitigation. Collis agreed.

Comments/questions regarding Oyster River crossing

1. Dave – is the Oyster River crossing overhead? *Response*: the wires will cross the Oyster River, but the project is also proposing a construction crossing that will consist of timber mats on the banks and as pilings in the shallow river. Explained RR crossing constraints and that the Oyster River crossing is a secondary plan should the RR deny crossing rights.
2. Cheri – time of year for construction will make a difference in NHF&G opinion. Probably prefer fall so the timber mats aren't placed in the river after reptiles & amphibians have burrowed into the mud for the winter. She will confer with inland and non-game staff. The inland fisheries staff may want to conduct some site surveys (electrofishing).

Comments/questions regarding Little Bay crossing

1. Several regulators asked how many cables will there be. How many active cables are there now? What is the spacing between cables? *Response*: 6 new cables, 3" diameter, spaced 30' apart. Joe explained the 30' spacing was necessary protection during installation. Laura described 1990's removal effort of old cables, and I explained that marine divers examined the old cables this year and found them to be sound enough for removal.
2. Cheri – what contaminants are associated with the old cables? Are they buried? *Response*: Lead wrap with paper and mineral oil insulation. They are mostly visible on the surface.
3. Sue – plan to survey for eelgrass within the corridor during peak growth in the season of construction
4. Cheri – should include sea lamprey among the diadromous fishes. She will check records to make sure that is appropriate.
5. Cheri – western tidal flat is feeding and spawning habitat for horseshoe crabs. *Response:* Ann concurred, and later said that the fall timing of the cable installation will protect the crabs and eggs from impacts.
6. Maria - should we be considering red knot (recently listed)? She will check in the office for its potential presence in the project area.
7. General interest in jet plow process – Ann described the process and the RPA-ASA water quality modeling.
8. Collis – what types of debris need to be removed from Little Bay? *Response:* minimal, video and diver surveys indicated most was related to the cables and debris (trees, anchors) caught on the cable.
9. Collis – would like a link to a jet plow video. *Response:* the project team will locate one.
10. Melissa – will any of the trenches be permanent? *Response*: No, all impacts will be temporary.
11. Cheri – concerned about timing of jet plow relative to tide – feels that plowing at high tide would create the largest plume. *Response*: the project team will evaluate, but reminded her of the work limitations due to shallow water in the tidal flats.
12. Ridgely – how wide are the trenches? *Response:* 4' at the surface.
13. Tim – do we know that we won't run into ledge with the jet plow? Response: yes, the subbottom profiling indicates no ledge at the proposed depths.

14. Dave – jet plow generally considered to be temporary impacts.
15. Cheri, Sue – why was jet plow chosen over HDD? *Response:* PSNH team described the general constraints of HDD for this project – length and risk of drilling, need for large staging areas on both sides of bay, equipment transport on small roads, risk of frac out.
16. Cheri – have we interacted with the aquaculture lease? *Response*: we recognize that will be necessary.
17. Melissa – will there be monitoring to look at recovery of benthic community after jet plowing? *Response*: Probably, the benthic samples were collected with post-construction monitoring in mind.
18. Sarah –suggestions for mitigation for jet plowing
19. Mark – suggests that marine specialists get together and discuss magnitude of temporary impacts in Little Bay and whether mitigation should be provided. Perhaps Phil Colarusso, Ed Reiner, state folks, NMFS; Great Bay Partnership should be included
20. Cheri – water quality modeling should evaluate whether jet plowing on neap tides would be better than on spring tides. Suggests trying to avoid the most dramatic tides. *Response:* the project will evaluate the feasibility of this approach but the necessary duration of the installation process will make this difficult.
21. Cheri – from where is the water withdrawn for the jet plow? What measures are taken to minimize entrainment? What is the inflow rate? *Response:* Joe described the process. The report will describe the specifics of the operation where possible. Joe emphasized that different contractors have different equipment specifications.
22. Dave stated Corps may not require mitigation because impacts are temporary. He will talk with Ruth Ladd (mitigation specialist at Corps).

Comments/questions regarding permitting approach

1. Dave – need to check on the Section 10 areas/activities to determine if Corps permit will be an IP or a GP
2. Mark – will there be a 401 Certificate regardless of whether the Corps permit is IP or GP? The general regulatory response was yes, that it would be evaluated by either the State or the Corps.
3. Collis – can't really discuss Water Quality Cert without having a good idea of full extent of the impacts.

4. Ridgely – may not trigger AoT if the land-based work does not reach the ground disturbance threshold for an AoT. The Little Bay impacts will be covered by Wetlands, therefore would be redundant in AoT.
5. Collis – Wetland department will probably take the lead in permitting with AOT providing comments
6. Chris (after the general meeting) – coastal zone consistency requirements will depend on status of federal review. If the Corps permit is an IP, then a consistency review will be necessary. If the Corps goes GP, DES has the prerogative to still require it, but typically does not. May confer with NOAA.

General Wrap Up Actions

1. Cheri – circulate the meeting summary so the agencies can review and annotate if needed
2. Sue requested the slide presentation, and was seconded by most other agencies.
3. Cheri – requested a detail slide of the Oyster River crossing for internal discussion.
4. I will talk to Lori Sommer to bring her up to speed regarding mitigation.

CONFIDENTIAL

March 4, 2015

TO: Dori Wiggin, Seacoast Reliability Project Team
FROM: Sarah Allen
SUBJECT: Summary of Pre-Application Meeting with Dori Wiggin, DES Project Manager

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Meeting Location & Date: DES, Portsmouth, NH, February 25, 2015

Attendees: Dori Wiggin (DES Wetlands), Sarah Allen (Normandeau, recording)

Sarah gave an overview of the project using the attached slides.

Dori was interested in the context of the project. She suggested we provide a solid rationale for the project, including information about the ISO review process. She asked if this project would benefit the other utilities in the seacoast region – can they use it?

Dori focused on **Little Bay crossing**, with questions about:

- Details of cable installation, including how a jet plow worked and hand jetting process
- Sediment quality. I referenced the National Coastal Condition Assessment sampling results that indicated sediment quality was good based on low contaminant loads, low toxicity, and low TOC. She requested a copy of the paper (attached).
- Extent of turbidity plume: we looked at modeling results from RPS ASA and discussed the temporary nature of the plume (worst case is that it dissipates in less than 9 hours). She asked if the summary model that shows area and time for the entire crossing is expressing time for an individual point or the entire plume . This question refers to Figure 3-5. Plan view of maximum time integrated excess SS concentration over the entire jet plowing operation due to jetting speed of 90 m/hr (5 ft/min). This figure represents the maximum extent of the plume as the jet plow passes each point while the cable is being installed. That means that the plume on the west side heading north is doing so while the jet plow is passing that area; the extent of this plume recedes with time after the plow has moved forward as indicated in the accompanying table giving durations by plume

concentration. Figure 3-5 represents about 16 hours of plowing at a rate of 90 m/hr. Assuming that the jet plow moves forward continuously, by the time it reaches the channel, the tide will have turned and the prominent plume on the west side of the bay will have dissipated to concentrations of 10 mg/L or less.

- Have we contacted the owner of the oyster farm to discuss the project and its potential impact on his business
- Cable removal. She requested the permit number for the 1996 cable removal effort. When the Pease office opened, she brought all paper files for the seacoast over. She may have more detail on the decision to leave the cables in place.

Terrestrial: I described the existing narrow (60') corridor clearing and that the remainder of the ROW will be cleared to 100' or limit of easement, if less than 100'.

- She's permitted other transmission projects and is familiar with the types and extent of impacts.
- Asked if we'd consulted with DHR – I said preliminary work is complete and we are meeting with DHR shortly.
- Asked about rare species – I described review and known issues as shown in slide.

Permitting:

- She had spoken to Chris Williams re coastal zone consistency, and agreed it would not be likely.
- She was glad to hear we were meeting with marine agency staff next week, but is unable to attend.

The SEC and public review process: she may ask that we have a DES public meeting at Pease separate from the SEC public meetings for the purpose of giving interested parties a less intimidating opportunity to ask questions and express concerns.

She thinks this will have to go to the Governor and Executive Council for signature after the 30-day appeal process for a Wetlands Permit is up. The trigger is a major project impacting State Waters. She is not sure how the SEC process could affect this review.

CONFIDENTIAL

March 4, 2015

TO: Seacoast Reliability Project Team
FROM: Sarah Allen
SUBJECT: Summary of Pre-Application Meeting with marine-focused agencies

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Meeting Location & Date: Normandeau Associates, Portsmouth, NH, March 3, 2015

Attendees: Sue Tuxbury (National Marine Fisheries Service), Phil Colarusso (US Environmental Protection Agency), Owen David (DES Watershed), Dave Keddell (US Army Corps of Engineers), Laura Games (Eversource), and Ann Pembroke and Sarah Allen (Normandeau, recording)

Laura, Ann and Sarah gave an overview of the project using the attached slides.

The discussion centered on the **Little Bay crossing**:

- Eelgrass: Phil concurred with our findings that the cable crossing area has not supported a long-term eelgrass bed since 2010. He dove on the site in 2011 and found only seedlings, which did not persist through the growing season. All agreed the project should inspect the site again just prior to installation.
- Cable installation: Dave asked what portion of the tide cycle would the hand jetting occur in, with the goal of minimizing turbidity. [Normandeau has since asked the installer and the answer was hand jetting could occur during high tide only for safety and water supply reasons]. The discussion of silt curtains resulted in concurrence that they would not be effective along the jet plow corridor because of currents, the fine texture of the material and the potential for their own disturbance. [The installer has since indicated that silt curtains will be effective for the hand jetting]. Some consideration will be given to using silt curtains to deflect the plume from the nearby oyster farm.
- Ledge – Sue asked how shallow ledge areas would be crossed if encountered. The project is still talking to the marine installer, who had mentioned the use of concrete mattresses if ledge was unavoidable.
- Oyster farms – show on a plan. Be sure to talk to Great Bay Oyster Co ahead of project.

- Water quality: Phil asked what the typical ambient turbidity in Great Bay is. Ann said that there isn't much data (one buoy in Great Bay below Adams Point) and that the results were highly variable. She will attempt to provide more information.
- The agencies agree that deposition of less than 0.5 mm would not be detrimental to winter flounder eggs, because of depth and time of year (eggs are not present).
- Sediment quality. Ann referenced the National Coastal Condition Assessment sampling results that indicated sediment quality was good based on low contaminant loads, low toxicity, and low TOC.
- Extent of turbidity plume: we looked at preliminary modeling results from RPS ASA and discussed the temporary nature of the plume (worst case is that it dissipates in less than 12 hours). We explained that installation plans are still evolving and that modeling used some conservative assumptions (e.g., assumed wider trench than likely to occur; did not take into account the fact that higher pressure would go through lower jet) that likely overestimated volume of sediments that would be dispersed into the water column.
- Mitigation measures will include restoration of saltmarsh, time-of-year restrictions, and any permanent impacts resulting from concrete mattresses

Terrestrial: I described the existing narrow (60') corridor clearing and that the remainder of the ROW will be cleared to 100' or limit of easement, if less than 100'.

Permitting:

- Dave pointed out that any protective mattresses for shallow cable would be considered permanent fill. Ok to restore salt marsh and rocky habitats.
- Sue asked if the project is planning on post-construction surveys to monitor the recovery of bottom contours.
- Sue asked to review the Corps General Permit when it arrived.
- Owen said that he and Gregg Comstock had decided the project would not need separate public notice for the 401.

NORMANDEAU
environmental consultants

May 7, 2015

TO: Seacoast Reliability Project Team
FROM: Sarah Allen
SUBJECT: Summary of Meeting with NH Fish & Game (NHFG) Environmental Review Team

Meeting Location & Date: NH Fish & Game, Concord, NH, May 7, 2015

Attendees: Carol Henderson, Mike Marchand, Evan Mulholland, Glenn Normandeau, Scott Decker, John Magee, Kim Tuttle, and one more (NHFG), Laura Games (Eversource), and Ann Pembroke and Sarah Allen (Normandeau)

Ann and Sarah gave an overview of the project using the attached slides. Lots of discussion was interspersed throughout the presentation, with the key comments and issues listed below.

<u>General Project Design and Construction</u>

1. What kind of legal land use vehicle does PSNH have for crossing Little Bay within the Cable Area? We could not answer – we should find out and get back to them.
2. Carol and others were very interested in HDD considerations, having been involved with permitting the gas line under the Gen. Sullivan bridge. We described land-based impacts, equipment and road constraints on west side, geologic fault in middle of Little Bay increasing risk of frac-out, long length and hard rock challenges of boring, length of time required and reluctance of Corps.
3. What are the new structure dimensions and materials, and fate of existing structures.

<u>Underwater cable installation</u>

4. Questions on understanding installation process and duration: size of cables and barge (180'x54'), sequence and duration of hand jetting and jet plow, time of year. Glenn Normandeau has a background in marine construction so understands the construction constraints.

5. How will the old cables be dealt with? Ann described the removal of sections of cable within the jet plow route that would be removed by the marine contractors using grapnel hooks, and lifted to the surface for on-shore disposal.
6. What is the duration of the work? The work will occur in the fall and will last 2-3 months. Each of the 3 cables will take approximately 1 week to lay, although the jet plow activity will be completed in 1 pass taking 12 -16 hours.
7. The question was raised whether we were being asked to do the Little Bay installation during the NH dredge window (November 15-April 15). We responded that had not been raised by DES. Glenn Normandeau concurred this activity is "not dredging."
8. When will the work be done, high or low tide? The intertidal work will occur by boat during high tide. The jet plowing will be timed to maximize a tidal cycle.
9. Where is project relative to oyster farmers? We described the majority of them lie north of the cable area, but for Bay Point Oyster Co, which straddles it. We also said the cable area was closed to shellfish harvesting.
10. They asked about permanent and temporary impacts in the bay. We described that most were temp impacts, and got into some detail on why and where permanent impacts from the concrete mattresses might occur.
11. Ann responded to many questions regarding the water quality modeling using the draft results coming in from RPS ASA.
12. How long does the plume last? Based on a preliminary model run, the sediment plume dispersed after 10 hours.
13. Where are the eelgrass beds? Ann described the mapped eelgrass beds (historically it has been present in the corridor but none since 2012). Project-specific surveys in 2013 detected no eelgrass.
14. What type of benthic monitoring was done and what were the results. Ann described the benthic communities as robust and typical of a healthy site, and that the sampling was done systematically to facilitate post-construction monitoring.
15. Was the sediment quality studied? The project relied on National Coastal Condition Assessment reports that indicated sediment quality was not a concern in Little Bay.
16. Glenn Normandeau commented that silt curtains in the deeper portions of the east shore handjetting area will be difficult to maintain. Discuss moving to shallow shelf with Caldwell.

<u>Terrestrial Wildlife</u>

17. Mike Marchand requested construction monitoring for snakes and turtles to clear area prior to work. Move individual animals, look for nesting activity and potential habitat.

18. Asked that the project cut distribution poles at the ground rather than remove them in areas where black racers could hibernate or aestivate. Kim Tuttle described sides of rail corridors as frequent habitat for molting snakes, especially among cast-off rail ties (several tie piles occur along SRP corridor).
19. Mike Marchand asked for detail maps of Crommett Creek area and Oyster River crossing to better understand location relative to known resources. Rachel Stevens (attended GBRPP meeting) knows the area best. I will send Monday.
20. Not much discussion on NE cottontail. All seem to agree that habitat management within ROW is important but no direct discussion. I will follow up with Mike to see if we should take that further.
21. Requested that the project avoid welded plastic in erosion control techniques to minimize risk to turtles and snakes.
22. Evaluate risk to osprey attempting to nest on structures based on proximity to suitable habitat. Consider erecting osprey platforms in ROW adjacent to new structures as mitigation. PSNH has done it elsewhere.
23. Mitigation – we described outreach efforts to towns and NGOs and the reluctance of Durham and Newington to be viewed as teaming with us. In-lieu-fee is the preferred option right now, but that may change in SEC process if towns express a preference. They seemed to agree that contributing to oyster reef construction may be a good option for Little Bay impacts.

NORMANDEAU ASSOCIATES
Environmental Consultants

June 12, 2015

Who: Dori Wiggin (NH Department of Environmental Services), David Keddell (US Army Corps of Engineers), Laura Games (Eversource Energy), Ann Pembroke (Normandeau) and Sarah Allen (Normandeau, recording)

DES Coastal office, Pease International Tradeport

Purpose: Follow-up Pre-application Meeting

June 10, 2015

Normandeau gave a brief summary of the principal changes that affected natural resource issues: the re-route of the cable on the east shore, the potential for needing concrete mattresses, more specifics on the water quality analysis, small whorled pogonia plans

Dave said he had met with Newington on June 8, specifically mentioning Dennis Hebert. Two issues for Newington were the historic district and route alternatives. Newington asked to have consulting status, so they are included on communications among the Corps, NH Division of Historic Resources (DHR) and the Newington Historical Commission. Dave later reiterated that it would be in the Project best interest to remind the SEC of the Corps' statutory authority. It is a federal statute and DHR is advisory. The alternative analysis should also address historic resources and be strong in the Project's defense.

Newington also gave Dave a sketch of several alternatives they were recommending. The primary one was underground along Arboretum Drive with overhead going cross country near the landfill at the east end. This shortens the line by approximately one-half mile.

Dave asked if he could attend the municipal meetings. I will ask the question.

Dorin asked for a comparison of safety and repair rates for overhead vs underground. She wants it during her evaluation of impacts.

Ray Konisky approached Dori about a new oyster reef. She can get the location. Dave mentioned his concern that oyster reef restoration is not typically a good match for soft sediment impacts. Also that no in-water mitigation is necessary because impacts are temporary.

Dori asked about NH Fish & Game dredge windows. Ann said Glenn Normandeau (NHFG commissioner) does not consider jet plowing to be dredging. Dori said that "it" is a rule and she may have to request a waiver. She recommended we build a case for the waiver.

Dori requested the PPT for her files. She will get back to us with guidance for submittal needs.

NORMANDEAU ASSOCIATES
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August 12, 2015

TO: Amy Lamb, Seacoast Reliability Project Team
FROM: Sarah Allen
SUBJECT: Summary of Pre-Application Meeting with Amy Lamb, NH Natural Heritage Program, Reviewer

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Meeting Location & Date: NH NHB, Concord, NH

Attendees: Amy Lamb (NHB), Sarah Allen (Normandeau, recording)

Sarah gave an overview of the project, including our consultation with NHNHB since 2013, rare plant survey methods, and results. We reviewed the draft Environmental Maps showing the locations of the one rare plant identified (*Carex cristatella*) and the limits of impacts to salt marsh. We agreed that the rare plant locations should be broadly indicated on the plan set and combined with archeologic Phase 1a resources as "Sensitive Resource Areas" as call-outs for construction contractors. Bill Nichols has tentatively confirmed Normandeau's identification of *C. cristella*, pending a few more details of the description.

We discussed in detail the location and type of salt marsh fringing Little Bay. Amy will check her records to confirm whether both High Salt Marsh (shallow peat variant) and Salt marsh system exemplary communities are mapped in this location. I described the restoration plan for salvaging the salt marsh peat from the work area, maintaining it for the duration of the work and then restoring the peat with rebar and coir logs to secure it through the winter.

Two of the four *C.cristella* locations will not be impacted by the proposed work. The remaining two will be temporarily impacted by the tree removal effort. This work will occur quickly over the course of a few days and will be performed from timber mats. Amy concurs with doing the tree clearing work between September 30 and April 15 to avoid impacts to potential habitat for the northern long-eared bat, as that time frame is also when the plant is senescing or dormant. She would prefer the work be done in this location between November 1 and March 30. I agreed that we can move the access road to the very edge of the SRP corridor to further minimize impacts to this open-growing species.

I will send Amy a project locus, and our 1-page summaries of the general project description with locus, and environmental impacts.

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Environmental Consultants

Date: September 18, 2015

Oyster farmer meeting

Attendees: *Oyster farmers*: Ralph Jimenez, Chris Simmers, (one more from Joe King), Jay Baker, Ray Grizzle, 3 others I couldn't identify, *NHFG:* Doug Grout, Robert Eckhart, Renee Zobel and one other, *Eversource:* Jim Jiottis, Kevin McCune, Martin Murray, Sarah Allen, Ann Pembroke

Location & Date: NH Fish & Game, Durham, June 17, 2015

Ann and Sarah presented a Little Bay-focused slide show of the project, including two videos showing the sediment plume and deposition modeled for the jet plow.

Questions and concerns from the farmers:

Monitoring and Contingency plans: Ray Grizzle (also UNH faculty at Jackson Lab) asked about Eversource's plans for these plans. We described that we were still early in the process and that a monitoring and contingency plan would be part of the negotiation/review process with the state and federal agencies. Jim was pointedly asked for the worst-case scenarios for the installation. Jim listed the jet plow breaking down, and cables flawed in the center of a reel.

Ray stated the burden is on Eversource to protect the farmers or be prepared to mitigate. Bay Point was not present at the meeting, but we need to give them particular assurance as they are located directly adjacent to the cable crossing.

Sediment testing: Ray pointed out that the EPA's NCCA testing is superficial and probably not representative of the entire profile. He suggested sampling a minimum of 3-4 feet deep. He said that the primary known source of contaminants in Great Bay is Pease AFB. Several farmers emphasized the importance of perception on the quality of their product, so real or perceived sediment or pollutant contamination is a serious threat to their harvest.

Deposition: Several farmers are doing cage-free, bottom farming – faster growth, thicker shells. Sediment deposition is a threat – ¼ inch is too much. We pointed out the modelling does not indicate any deposition reaching any of the aquaculture sites and that most of it is <0.5 mm. They accepted the information but appeared to remain skeptical.

Installation: Concerned about bay closures limiting access to their farms during installation – at least Joe King moors their work barge off Adams Point so crosses the Cable Area en route to their site. We described the anticipated closure of the immediate work area in Little Bay across the full width for a day for each cable lay. Communication will be key.

NORMANDEAU ASSOCIATES
Environmental Consultants

Time of year: September-October is their busiest harvest period (although it starts around Memorial Day). Fat Dog asked if we could begin our work in November. We described the work constraints (too cold in winter, recreation in summer, sensitive fish and eelgrass).

We learned a lot about the industry. They have to get permission from DES to harvest due to E.coli levels. It takes 2-3 days for oysters to purge ingested E.coli. Probably similar for excess sediments, but average sediment loads are filtered by gills and are not ingested. Not certain about other pollutants. It takes about 3 years in NH to get an oyster to marketable size. There are no depuration facilities in NH but DES can arrange for access to Maine or Massachusetts depuration sites. However, since shellfish that have been depurated have to be labeled as such for sale, oyster farmers are reluctant to do so. Fat Dog generally raises their harvested oysters higher in the water column for a few days to self-cleanse. Oyster farming is a young, evolving, rapidly expanding industry. Fat Dog was one of the earlier farms, and started in 2011.

SRP Interagency meeting

January 12, 2016

Attendees:

Dave Price, NHDES Proj Mgr	Dave Keddell, USACE	Jim Jiottis, Eversource Site Eng
Lori Sommer, NHDES Mit	Rick Kristoff, USACE	Joe Sperry, Eversource Line Eng
Ridgely Mauk, NHDES AoT	Mike Johnson, NOAA	Kurt Nelson, Eversource Environ.
Owen David, NHDES 401	Phil Colarusso, USEPA	Ann Pembroke, Normandeau, Marine (recording)
Amy Lamb, NHNHB	Mark Kerns, USEPA	Sarah Allen, Normandeau, PM, Terrestrial
	Maria Tur, USFWS	

Sarah Allen (SA) and Ann Pembroke (AP) provided a power point presentation summarizing the project including recent revisions on locations of buried sections, status of agreements with towns and landowners, water quality modeling results, updated resource impact areas, status of mitigation discussions, and revised filing schedule.

Ensuing discussions covered these topics:

Alternatives

- Mike Johnson (MJ) asked whether the Little Bay crossing could be done using HDD. SA and Jim Jiottis (JJ) provided an explanation of why the project determined this was infeasible (length of bore at upper limit of technology; would require a 42" bore; subsurface entirely bedrock (hard and slow) and there are several faults in the middle of Little Bay increasing risk of "frac out"; both ends are in neighborhoods; installation would take about 10 months, with 24 hr/day activity; lay down area would be about 1 mile long; access for heavy equipment challenging with existing roadways in Durham)

- MJ asked whether the project considered crossing at Adams Point (through Furber Strait) where the crossing would be much shorter. SA and JJ pointed to the fact that there is no existing utility corridor in this area so that would require construction in a virgin corridor, something that Eversource tries to avoid.
- Maria Tur (MT) asked if we were able to avoid the wildlife refuge on Pease. Response was yes.

Installation

- Mark Kern (MK) asked if on-shore burial of the cable is an issue. JJ responded that Eversource rights are for overhead facilities so (at least in some cases) they will have to acquire the underground rights in order to bury the cable
- MJ asked for further explanation of the jet plow process, specifically whether the cable is laid during the passage of the plow or if an additional pass is required. Ap and SA provided more detail on the process. Installation of cable is simultaneous with jet plow passage.
- MJ asked whether we would need to go back to rework the sediment to restore bathymetry after installation. AP responded that we did not expect to have to do so. Experience has shown that the

opening created by the jet plow substantially fills back in immediately. While there may be a depression over the cable initially, the water quality model results suggest that there will not be mounds of sediment adjacent to the cables. It is also expected that Eversource will require the marine contractor to demonstrate that they have achieved the required burial depth.

- Dave Price (DP) asked if the marine contractor we've been working with is going to be the contractor actually doing the work? How much experience do they have? JJ & SA responded that the contracting process at Eversource probably doesn't allow them to hire this contractor without competitive bid (not stated, but it is likely that Eversource will contract the production of the cable and it is the cable manufacturer who will hire the installer). The marine contractor we've been consulting does have substantial experience installing cables using jet plows in many different environmental conditions (sediment types, current velocities, environmentally sensitive areas).

Impacts

- MK asked that we provide maps of forested wetland clearing within the ROW. SA said they are included in our mapping.
- MJ noted that the impacts table had about 273,000 sq ft of tidal impact and asked if that included all the burial in Little Bay. Does it include the side-cast area? Is it cumulative for the three cables, including a total width of about 100 ft (accounting for the 30-ft separation between cables)? SA responded that the number is cumulative taking all these factors into account.
- MJ asked how does the aquaculture lease on the eastern end of the cable route feel about the project? AP responded that we have had discussions with him and he has not raised any objections. We tried to make very clear that the expected sediment plume behavior in the vicinity of his project is based on a model and may not be completely accurate.
- AL asked how the Project will avoid the *Carex* habitat during construction. SAndicated that the project would actually "touch" the edge of only one area of *Carex* habitat. It may actually allow the habitat to expand as this species prefers open areas.

Resources

- Phil Colarusso confirmed that there was no eelgrass observed in Little Bay during the 2015 PREP survey.
- AL asked whether there will be a pre-installation survey for eelgrass. We responded that Eversource plans to survey the project area in summer 2017 prior to in-water installation.
- MT asked about small whorled pogonia surveys. SA responded that the known site is about ½ mile north of the SRP. We coordinated with Susi von Oettingen (FWS) to screen for potential habitat and found 2 sites that met the criteria. Field surveys in late June indicated marginal habitat and no small whorled pogonia.

Mitigation

- Lori Sommer (LS) - were the in-lieu fee amounts calculated based on a percentage of secondary impacts? SA confirmed the project used 15%.
- LS asked what Durham is proposing to do in the Wagon Hill Farm shoreline restoration proposal. How much money are they looking for? SA explained that Durham would like to stabilize the shoreline,

restore salt marsh and a small amount of freshwater habitat, and create barriers to human and dog access. SA said that the project would require additional engineering study to identify and solve the shoreline erosion.

- LS commented that the Aquatic Resources Conservation Fund has recently provided funding to the Powder Major project in Durham. Would Eversource consider contributing to that project? She acknowledged that the timing of the SRP may not coincide with the funding campaign. Other thoughts include an oyster restoration grant in Greenland and the Spruce Woods forest in Durham (New England cottontail habitat restoration).

Permits

- MK asked whether there has been a decision regarding need for a 401 Water Quality Certificate; Owen David said that since this project is going to the SEC and there is not an individual Corps permit, there will not be a stand-alone Water Quality Certificate. However, he will be providing conditions to be included in the overall permit for the project.

Monitoring

- Salt marsh
    - MJ asked how long we proposed to monitor salt marsh recovery – 3 to 5 years?; usually requires a 3 year minimum
    - LS said the state would allow cessation of monitoring after 3 years if it has been demonstrated that there are no issues
- Water quality
    - DP asked whether we would do turbidity monitoring and establish threshold exceedances
    - MJ recommended there be a discussion of turbidity monitoring. He felt it may or may not involve a stop work clause but there is value to having data confirming how well the model works. AP said that the model was run on suspended sediments, not turbidity, which cannot be measured directly in the field so that complicates trying to validate the model in the field. AP also indicated that including a stop work clause for a specific cable run would be onerous because stopping the jet plow in the middle of a run is technically very difficult. AP also said that Eversource can put conditions in their contract with the installer controlling aspects of their operations (e.g., jet plow advancement rate as the model showed that a substantially faster rate results in higher plume concentrations, although for a shorter duration). The consensus of the agencies was that Eversource should propose water quality monitoring for the filing.
    - Ridge Mauck suggested that since Eversource is installing three cables about a week apart that the Project should look at a process where the results from water quality monitoring of a single cable could be evaluated prior to the next installation and used to make adjustments for the subsequent installations.

- Re-deposition
    - MJ made the point that SSFATE was not really developed to predict deposition of sediments and doesn't necessarily function very well for that. Can we do something to validate those predictions? This will be addressed in the monitoring program.
    - AL – will we be monitoring bathymetry after installation? AP – in general, the marine contractor will likely be required to do that.
    - AL – since we will be affecting "exemplary habitats" in Little Bay, will we be doing any monitoring to confirm impacts are as predicted (not worse)?

Other

- MK asked how controversial the project is. SA indicated that there is certainly local interest and that project is meeting regularly with all municipalities and interested residents. Newington is still withholding support and trying to find alternative routes.
- Consensus that the confidential data for NHB, USFWS and other resources should be summarized in the public portion of the application, with locations and other details provided under separate cover.

Follow-up

- Develop proposed Little Bay water quality monitoring program and follow up with agency discussion.
- Develop proposed post-construction bathymetric surveys and follow up with agency discussion.
- Develop post-construction monitoring program for *Carex cristatella* impact area.

From: Price, David
To: Brown, Carroll
Cc: Domke, Jason; Sarah Allen
Subject: FW: SRP meeting
Date: Friday, February 19, 2016 11:55:51 AM
Attachments: SRP Env Fact Sheet 021816.docx

Carroll,
Jason mentioned to me that you should be aware of this project and to coordinate how this may affect the DES Oil Spill Response. Attached is a narrative that describes the project. In particular, take a look at the second page which describes work within the Piscataqua River. Eversource may need to limit/restrict river traffic during this portion of work. I've cc'd Sarah Allen, Normandeau Associates, with this e-mail because they are the consultants working on the project for Eversource. Sarah may be able to provide additional information about timing and coordination of work to minimize interfering with the DES Oil Spill Response operations.
Thanks and let me know if you have any questions.
Dave

David Price
DES Land Resources Management
Pease Office - 222 International Dr. - Ste. 175
Portsmouth NH 03801
(603) 559-1514

From: Sarah Allen [mailto:sallen@normandeau.com]
Sent: Thursday, February 18, 2016 5:52 PM
To: Price, David; Hilton, Scott; Sandin, Peter; Nash, Chris; Domke, Jason
Cc: kurt.nelson@eversource.com; dena.champy@eversource.com
Subject: RE: SRP meeting

Hello All,
Dave Price suggested I follow up with you all to provide additional information on the Seacoast Reliability Project. I've attached their 1-page project description just for reference and would be happy to meet with you to discuss the project and any concerns you may have.
Sarah

From: Price, David [mailto:David.Price@des.nh.gov]
Sent: Friday, January 15, 2016 2:04 PM
To: Sarah Allen
Cc: Hilton, Scott; Sandin, Peter; Nash, Chris; Domke, Jason
Subject: FW: SRP meeting

Hi Sarah,
Thanks for the meeting minutes and the Powerpoint presentation. I discussed the project with a few other folks here at DES, cc'd on this e-mail, after the meeting and some questions came up.

1. Have the sediments in the river where work is proposed been analyzed for contaminants? If so, what are the results?
2. There was a concern of possible elevated bacteria levels from the proposed work within the

river. It was suggested that monitoring of the bacteria levels be conducted during construction. Is this a possibility?

3. You mentioned that the river would be closed to boat traffic during construction. This may affect the operations of the DES Oil Spill Response and Complaint Investigation Section. Have you coordinated with DES regarding this issue? If not, you may want to discuss with Jason Domke copied on this e-mail.
4. Is there work proposed on the Pease Tradeport property? If so, have you coordinated with the Pease Development Authority?
5. Do you think there would be a need for dewatering work areas that are either on Pease Tradeport property or nearby?

Scott, Peter, Chris and Jason, anything to add?

Thanks again and let me know if you have questions or need anything clarified.
Dave

David Price
DES Land Resources Management
Pease Office - 222 International Dr. - Ste. 175
Portsmouth NH 03801
(603) 559-1514

From: Sarah Allen [mailto:sallen@normandeau.com]
Sent: Friday, January 15, 2016 10:45 AM
To: colarusso.phil@epa.gov; Patterson, Cheri; kern.mark@epamail.epa.gov; david.m.keddell@usace.army.mil; joseph.sperry@eversource.com; Lamb, Amy; Mike R Johnson - NOAA Federal (mike.r.johnson@noaa.gov); Kristoff, Richard C NAE (Richard.C.Kristoff@usace.army.mil); Mauck, Ridge; David, Owen; Wiggin, Dori; Sommer, Lori; Maria_Tur@fws.gov; Forst, Darlene; Comstock, Gregg; bill_peterson@fws.gov; Price, David; Kristoff, Richard C NAE (Richard.C.Kristoff@usace.army.mil)
Cc: Ann Pembroke; kurt.nelson@eversource.com; dena.champy@eversource.com; sandra.gagnon@eversource.com; joseph.sperry@eversource.com; James J. Jiottis/NUS (jiottjj@nu.com)
Subject: RE: SRP meeting

Hello All,

Thank you for your time and input on Tuesday during the Seacoast Reliability Project review. It was very constructive from our perspective. Please find attached our meeting notes and a copy of the presentation. Let me know if you have any comments or further questions.

Sarah

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Seacoast Reliability Project

EVERSOURCE ENERGY

Environmental Fact Sheet

The Seacoast Reliability Project (SRP) is a new 115kV transmission line that will traverse portions of the towns of Madbury, Durham, Newington and the City of Portsmouth. The Project will be primarily located within existing electric utility and railroad corridors. The new line will be approximately 13 miles long and will include a combination of overhead and underground design.

Eversource has designed the SRP to avoid or minimize environmental impacts while strengthening the existing electrical infrastructure in the Seacoast area. Extensive environmental studies were conducted by an experienced team in consultation with state and federal regulatory agencies. The results of these studies have been incorporated into the siting, design and construction aspects of the Project. The majority of the environmental impact of the Project is temporary and limited to the construction phase of the Project

Eversource will follow best management practices (BMPs) during construction to minimize disturbance to wetland and water resources. Measures include current erosion control techniques, matting to minimize disturbance to wetlands, cable installation in Little Bay during the fall to minimize impacts to fisheries and recreation, and water quality monitoring during cable laying to ensure compliance with state and federal water quality requirements. Eversource will utilize an environmental specialist to routinely meet with contractors, inspect work areas for BMP and regulatory compliance, and ensure any temporary impacts due to construction are stabilized or restored as quickly as possible.

Project Right-of-Way

Terrestrial and water resources have been avoided where possible, resulting in less than 1,000 square feet of permanent fill in freshwater wetlands. Temporary impacts to wetlands and streams consist almost entirely from timber mats for work pads, access roads and tree clearing routes. There are no vernal pools present in the proposed Project work area.

The grassland/shrubland within the existing corridor provides habitat resources to species such as white-tailed deer, red fox, striped skunk, garter snake, wild turkey, blue jay, grey catbird, and goldfinch. Portions of the corridor provide habitat for state-listed rare wildlife species, including the New England cottontail, northern long-eared bat, black racer, Blandings turtle, spotted turtle, and ringed boghaunter, among others. Some of these species will benefit by the increase in shrub habitat, and none is expected to be adversely affected by the Project.

Photo courtesy of Mike Marchand/NHFG

The New England cottontail is dependent on shrub and grasslands. Populations are declining in the Seacoast area as these habitats mature or are developed. Eversource works with NH Fish and Game to manage transmission corridors to benefit the New England cottontail. While none of these rabbits are currently known to occur in the Project area, the SRP right-of-way will have the potential to provide a connective route for the New England cottontail to disperse to other suitable habitats.

Little Bay Crossing

Specialized marine cable will cross Little Bay within a "Cable Area" charted by the National Oceanic and Atmospheric Administration. Cable installation methods include a combination of jet plow in deeper waters and hand burial in shallow waters, designed to minimize turbidity plumes and redeposition in the area. The jet plow is considered to be the Best Available Technology for this type of installation for several reasons: the direct disturbance footprint is limited to slightly wider than the width of the plow blade (about 1 foot); the blade extends into the sediment slightly below the required burial depth for the cable; water pressure to the jets can be controlled to reduce the amount of sediment likely to be suspended in the water column; the cable can be laid simultaneously with jetting so only one pass of the jet plow is required per cable; ans no open trench remains after installation (although there will likely be a shallow depression over the cut). Duration of jet plowing is expected to be about 13 hours per cable.

Little Bay, including the Cable Area, provides habitat for shellfish, benthic infauna, lobsters and horseshoe crabs, and fish. The only permanent impacts will be limited to concrete mattresses used in locations near the shorelines if shallow bedrock prohibits cable burial to its full depth. Temporary impacts to the area include alteration of benthic habitat and brief increased levels of suspended sediments. The jet plow's water system uses approximately 0.2 percent of the total volume of water in upper Little Bay; early life stages of certain marine species will be entrained, but given the statistically insignificant volume of water, adverse effects to marine species will be minimal. During operation, any magnetic fields emitted from the cables are unlikely to be detectable by these species.

No eelgrass beds occur within the proposed cable area. The cable installation will not affect eelgrass production elsewhere in Little Bay because of the brief timeframe expected for suspended solids in the water column (maximum of 6 hours in any given location) and the time of year proposed for the work, beginning in September when eelgrass is at the end of its season.

Temporary impacts to diadromous fish such as adult American eel, juvenile alewife, blueback herring, American shad, and rainbow smelt will be minimized because of the short duration of the jet plow installation and corresponding limited water quality effects.

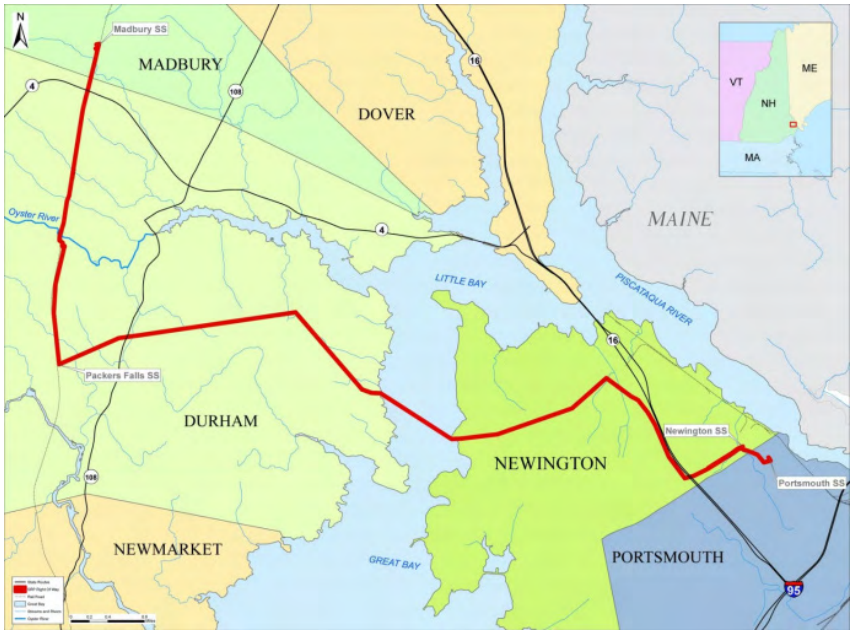
There will be no permanent impact to tidal wetlands. Several areas of fringing salt marsh will be crossed as the cable comes ashore. The salt marsh peat and vegetation will be salvaged prior to cable burial and replaced at grade after completion of the cable laying.

Construction of the Project may result in minor, short-term localized effects on air quality, primarily from fugitive dust (resulting from ground disturbance at work sites and vehicular movements on access roads along the ROWs) and from vehicular emissions associated with operating construction equipment, but both of these impacts will be controlled through the utilization of dust suppression methods (primarily watering) and/or restrictions on idling No long-term effects on air quality will result from the operation of the proposed transmission lines.

The Seacoast Reliability Project will increase the dependability of electric infrastructure. By locating the project within an existing utility corridor, potential environmental impacts will be avoided or minimized.

An Eversource project representative can be reached by

email: transmissioninfo@eversource.com, by phone: 1-888-926-5334, or at the website WWW.Eversource.COM (click Transmission, Project Information for Customers, Seacoast Reliability Project).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Madbury SS
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Oyster River
LITTLE BAY
PISCATAQUA RIVER
Packers Falls SS
DURHAM
NEWINGTON
Newington SS
Portsmouth SS
NEWMARKET
GREAT BAY
PORTSMOUTH
4
16
108
95

5 Statements in Response to the 20 Questions (Env-Wt 302.04)

WETLANDS PERMIT APPLICATION – ATTACHMENT A
MINOR AND MAJOR - 20 QUESTIONS

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

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 PSNH Seacoast Reliability Project (SRP, or Project) is proposed as a part of PSNH's continued effort to provide high-quality service to the customers of New Hampshire and to meet reliability and other applicable benchmarks. It has been approved by ISO-NE as part of PSNH's Seacoast Reliability Solution. It is one of seven projects in the Solution; the other six are relatively minor in nature, including line upgrades, line uprates, and substation improvements. The SRP is a reliability project. The purpose of SRP is to provide a parallel path to enhance the existing 115 kV loop between the Deerfield and Scobie Pond Substations in order to address reliability concerns in the New Hampshire Seacoast Region, which have previously been identified by the Independent System Operator – New England ("ISO-NE"). PSNH, working with ISO-NE, conducted a needs assessment study which concluded that the New Hampshire Seacoast Region requires additional transmission capacity to support the reliable delivery of electric power to meet the Region's current demand and future increased demand. **Additional information is included in the permit application narrative and associated NH SEC application materials.**
2. That the alternative proposed by the applicant is the one with the least impact to wetlands or surface waters on site.
Beginning in 2008, a working group led by ISO-NE conducted a Needs Assessment, which led to a determination that the New Hampshire Seacoast area ("Seacoast Area") requires additional generation resources and/or transmission capacity. The Needs Assessment found that there are violations of the transmission system criteria in the Seacoast Area under certain potential system operating conditions. As a result, the working group also conducted a Solution Study to identify potential solutions to correct these violations. The Solutions Study led to the development of four solution alternatives, each comprised of a separate suite of projects, one of which included the Madbury to Portsmouth Project. After reviewing each suite of projects, the solution set that included the Madbury to Portsmouth project was selected by ISO-NE on January 12, 2012 as the preferred solution, consistent with regional transmission planning standards as the lowest cost and best overall option. **Detailed natural resource studies were not conducted for all the alternatives as that level of detail is not required; however the benefits of the preferred alternative related to wetland and surface water impacts include utilizing an existing cable crossing area in Little Bay, utilizing existing ROW areas including wetland and other areas that are periodically disturbed for maintenance and vegetation management, and fewer impacts to prime wetlands. See narrative for additional detail on the various alternative routes studied.** **Additional information is included in the permit application narrative and associated NH SEC application materials.**

3. The type and classification of the wetlands involved.

The majority (49%) of terrestrial wetlands associated with the Project corridor are combinations of palustrine scrub-shrub (PSS) and emergent (PEM) with primarily emergent wetlands comprising 17%. Other combinations of PSS, PEM, PFO, and PUB wetland make up the remaining systems. Estuarine wetlands associated with the Project are predominantly intertidal flats (E2US), and subtidal areas (E1UB), with smaller areas of salt marsh(E2EM) and rocky shore (E2RS). The majority of the estuarine areas are E2US and E1UB systems. Permanent impacts are proposed for E2US, PSS, PEM and E2RS wetland types, the majority of which are associated with concrete mattresses that may be required to protect portions of the submarine cables in Little Bay. The majority of temporary impacts are proposed for PSS and E2US/RS, E2EM and E1UB wetland areas. No permanent impacts are proposed to any streams, with limited temporary impacts for both perennial and intermittent streams. No vernal pool impacts are proposed.

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

Nearby, off-site freshwater wetlands and surface waters will not be affected by the proposed project. The wetlands within the existing transmission ROW vary in size, value, function and development. Several are small isolated wetland pockets that exist due to the unique regional combination of topography and soils, while others have been affected by, or created by, human activities in the corridor. Small wetlands were avoided during the planning stage of the project to reduce overall project impacts. Other wetlands are larger and extend outside the project corridor, or are crossed by the ROW and exist as part of a larger wetland system. Due to their size and shape, these wetlands were unable to be avoided; however impacts were minimized to the extent practicable.

The submarine and underground portions of the project were sited to avoid and minimize impacts where possible while still accommodating the required access points and other fixed engineering parameters. Installation technology including jetplow and others were chosen to minimize collateral impacts on adjacent wetland and water resource areas. Sediment dispersion modelling indicates short-term temporary sediment suspension and redeposition in Little Bay, with permanent impacts limited to the potential use of small concrete mattresses

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

None of the terrestrial wetlands within the SRP corridor are rare wetland types. Four exemplary communities occur in Little Bay. One rare plant species was located during field investigations. The majority of streams will be crossed using temporary bridges, thus limiting impacts. Impacts within the 100-foot tidal buffer zones (TBZ) associated with Little Bay have been avoided and minimized wherever practicable and have been restricted to previously developed/disturbed areas within the TBZ, including those associated with the existing ROW, electrical distribution line and structures, and existing residential development and associated driveways. A total of 11 SF of permanent and 21,166 SF of temporary impacts are proposed within the TBZ. The submarine portions of the project have been sited within an existing cable crossing area. Permanent impacts are not proposed to salt marshes and will be limited to areas where concrete mattresses are needed to protect the buried cables. The remaining impacts to the tidal areas are temporary.

Additional information is included in the permit application narrative and associated NH SEC application materials.

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

A total of 6,128 SF (0.14 acres) of permanent wetland impacts are proposed as a part of the Project; these impacts are unavoidable and have been minimized as much as possible. A total of 577,259 SF (13.25 acres) of wetlands are proposed to be temporarily impacted during clearing and construction activities. Permanent impacts are associated with the installation of new transmission line structures in terrestrial areas and the potential need for concrete mattresses for cable protection in estuarine areas. Temporary impacts are associated with timber matting along access roads and for work pads and for impacts associated with installation of the marine cables using jetplow and hand-jetting technology.

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.

According to data Normandeau received from NHNHB in 2013, 2014 and 2015 (Appendix A), NHB identified 9 plants, 6 exemplary communities, 1 invertebrate, 5 fish populations, 4 reptiles, 9 bird species, and 2 mammals that have occurred or currently occur within the vicinity of the project area. The results of field surveys and desktop analyses indicate that the Project corridor may provide habitat for 4 natural communities (Sparsely vegetated intertidal system and Subtidal system, High salt marsh, Salt marsh system), 1 invertebrate (Ringed boghaunter), 5 fish (Shortnose Sturgeon, Atlantic Sturgeon, American Eel, Banded Sunfish, Swamp Darter), 4 reptiles (Eastern Hog-nose Snake, Northern Black Racer, Blandings and Spotted Turtles), 2 birds (Bald Eagle, Osprey) and 2 mammals (Northern Long-eared bat, New England Cottontail). One plant species, crested sedge, was found in Durham.

In general, impacts to protected species will be managed through best management practices during construction. Examples include pre-construction surveys to ensure the absence of nesting bald eagles and osprey (if either species is breeding within or near the ROW, time-of-year restrictions may apply); surveys during construction to clear the work area of turtles and snakes; handcutting in the vicinity of the ringed boghaunter habitat in the unlikely case that larvae use the marginal habitat in the ROW; and minimization of clearing preferred shrubby areas in high priority New England cottontail habitat. Impacts to northern long-eared bats, assumed to occur in the project corridor, will be small and inconsequential to local and regional populations . Approximately 0.02 acres of unavoidable temporary impacts to the fringing salt marsh will be restored following burial of the cable. Restoration techniques will include salvaging the intact peat prior to trenching for replacement after the cables are buried. No vernal pools were identified within the ROW.

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

The proposed project will not permanently impact public commerce, navigation or recreation. Temporary disruptions to recreation via the use of the existing corridor access trails for hiking, ATV/ORV use, snowmobile use, or cross country skiing may be temporarily affected during construction periods, depending on the season. Brief, temporary disruptions to navigation may also occur during construction activities within Little Bay; however applicable safety and best management guidelines will be followed at road and waterway crossings as well as the proposed crossing of Little Bay. Coordination with the appropriate authorities and advance notification of potential disruptions will further minimize the extent to the anticipated temporary distruptions.

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

The Visual Assessment ("VA") prepared for the SRP concluded that the Project will not have an unreasonable adverse effect on aesthetics. Before filing its application, PSNH held multiple local meetings with each host community as well as representatives of the University of New Hampshire. As a result, PSNH incorporated, and is continuing to incorporate, design elements that reduce visual impacts, including: relocating distribution lines, where possible, in order to reduce transmission line structure heights including the replacement of the 90-115-foot double circuit monopoles in Newington with H-Frame structures that range between 60 and 70 feet by removing the existing 34.5 kV distribution line from the proposed underbuild, and working with individual property owners to shift structure locations, where possible. The co-location of the Project within an existing electric corridor significantly reduces the visual impact associated with Project development as these areas are already disturbed. The use of the existing corridor will help to reduce the disruption to land uses and minimizes the amount of new clearing required. The lack of highly sensitive areas, coupled with the existing development patterns, limits the impact of the SRP to visual resources.

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 public rights of passage or access will not be permanently impacted as a result of the Project. The new transmission line will be located within an existing ROW and consist primarily of overhead structures. The marine portion of the Project will be installed underground and underwater, thereby eliminating any permanent obstructions. Temporary, short-term closures necessary to safely complete construction of the various project components may be necessary, and these will be coordinated through the appropriate authorities and advance notice will be provided where possible.

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 SRP corridor includes easements across many parcels of land, that convey the right to Eversource to construct and replace transmission lines in support of the reliability of the transmission system. All permanent impacts will be restricted to the corridor, PSNH owned parcels, or lands where easements or other allowances are present. The vast majority of the impacts will be temporary and limited to wetlands and surface waters located within the ROW (or in areas adjacent to it, for access roads) and within easement bounds to the extent practicable.

BMPs and erosion control measures will be employed throughout construction and maintained to ensure that sediment and other pollutants do not leave the worksite and impact downstream/down-gradient abutting owners and any associated natural resources. The proposed permanent impacts (new structures) will have a minimal impact on surrounding areas due to a very small footprint. Temporarily impacted areas for access roads and work pads and along the underground portions of the project will be restored to grade and stabilized with native vegetation. Short-term, temporary impacts associated with the submarine portion of the line will be minimized and also controlled using sediment curtains and other measures where technically feasible.

Additional information is included in the permit application narrative and associated NH SEC application materials.

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

The project will improve upon the existing network of electrical delivery system in southeast New Hampshire. This will have a positive impact on the lives of PSNH customers due to the increase in reliability of electricity delivery. The SRP is a critical project that will facilitate the transfer of power through these regions of the state to help ensure the availability of sufficient electricity during high demand periods, which frequently occur in the summer months.

PSNH will construct and operate the Project in accordance with all applicable safety and electrical codes, including the National Electrical Safety Code and all PSNH transmission line design standards.

There will not be an increase in audible noise in the vicinity of the Project because audible noise and other associated effects of corona discharge are typically not noticeable at lower transmission operating voltages, such as that of this proposed 115 kV transmission line.

In March 2015, the European Union's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) issued its most recent review of health research on electromagnetic fields, including ELF EMF. Consistent with WHO's conclusion, the SCENIHR report did not conclude that the available scientific evidence confirms the existence of any adverse health effects associated with ELF EMF exposure.

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.

There will be no change in the quantity of surface water or groundwater as it currently enters and leaves the project corridor. Best management practices (BMPs) (New Hampshire Department of Resources and Economic Development 2010) will be employed to avoid temporary impacts to water quality during construction activity and these measures will be installed prior to construction, maintained throughout the work, and removed when applicable following the end of the project. Disturbed areas will be restored based on BMPs and agency recommendations. Construction of the marine portion of the Project has been designed to minimize the temporary impacts to water quality to the maximum extent practicable. Water quality changes related to the installation of cables within Little Bay will be minimized through advanced technology (jet plow), utilization of controls such as sediment curtains, and restricting work to coincide with favorable tidal conditions. Any changes in water quality from suspended sediment will be brief in duration and limited in scope. A water quality monitoring program is proposed to measure turbidity during construction. Potential emerging contaminants in groundwater associated with Pease are being tracked. The project will coordinate with NHDES and USEPA to develop a handling strategy if PFOA/S levels exceed acceptable levels in construction areas.

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

The project is not expected to increase erosion or sedimentation, and techniques described in the New Hampshire BMP's manual (NH DRED 2010) will be followed during construction to prevent temporary impacts. The quantity of new fill in floodplains will not not measurably increase, with 5 new structures (six total poles) located in floodplain areas and a total of three existing distribution structures removed from floodplain areas. No permanent road construction or other significant earthwork is planned and disturbed areas will be restored and stabilized following construction. The underwater cable crossing will use a 2-stage jetplow to minimize sediment suspension. Sediment suspension and dispersion modelling indicates that all suspended sediments in excess of 10 mg/L will be undetectable after 3 hours for each of the three cable installations.

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.

Proposed work in surface waters will be temporary in nature and associated with temporary access across terrestrial wetlands to the work sites located along the existing ROW. The majority of small streams will be temporarily bridged with timber matting and temporary culverts are necessary in only two areas. One perennial stream (College Brook located on the UNH Campus) is proposed to be crossed by an underground portion of the line via open trench. To accommodate the temporary installation of the line through this area, a temporary diversion will be needed so the work can be done under dry conditions within the stream. Following installation the streambed and banks will be restored to pre-existing conditions and stabilized and the temporary diversion of surface water will be removed. These terrestrial wetlands do not contain any currents or wave energy.

The Little Bay crossing will be located underground and/or as submarine cable installed via using jetplowing, along with hand-jetting and trenching in the nearshore areas. Concrete mattresses will be required where the cable cannot be buried to the specified depth to provide protection from anthropogenic and environmental disturbances. The mattresses are articulated and low-profile and are not ancitipated to reflect or redirect wave or current energy.

Therefore this project will not permanently reflect or redirect current or wave energy as the areas will be restored to pre-construction grade.

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.

This project serves the public, including the local landowners, and is therefore not directly comparable to an individual land-owner's desire to fill wetlands for private use. Nonetheless, permanent wetland impacts associated with the terrestrial portions of the project will be minimal (approx. 792 SF), and these permanent impacts are spread out over 24 separate wetlands in three towns: Madbury, Durham, and Newington. No permanent impacts are proposed within the City of Portsmouth. The largest permanent terrestrial impact in any wetland is 199 SF, which will occur in wetland MW2 in Madbury. Proposed permanent impacts to the estuarine portions of the Project will not exceed 5,336 SF, and may be less. These impacts have been minimized where possible and are associated with required protection measures where the submarine cable cannot be buried to a sufficient depth. The E2RS and E2US wetlands proposed to be impacted extend throughout the Little Bay area. Impacts are restricted to an existing cable crossing corridor which has been utilized in the past and contains de-energized cables that are obsolete. Overall, the potential cumulative impacts will be minimal due to the limited amount of terrestrial permanent impacts and regulatory restrictions associated with estuarine impacts outside of the existing cable crossing area.

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

Permanent impacts to terrestrial wetlands are minor (792 SF) and have been avoided or minimized where possible. Temporary impacts are not anticipated to have any adverse effect on the functions and values associated with the affected wetland systems. Applicable construction BMPs, on-site monitoring, and restoration of temporarily impacted areas according to standards and based on agency recommendations will be employed. The functions most commonly associated with the permanently impacted terrestrial wetlands include groundwater discharge, floodflow alteration, production export, sediment/toxicant retention and wildlife habitat; however the small footprint of new transmission line structures will not affect these wetland functions or those associated with the wetland complex.

Permanent impacts to the estuarine wetlands associated with Little Bay have also been avoided and minimized where possible, and are limited to surficial protection measures (concrete mattresses) that are required by the National Electrical Safety Code (NESC) for submarine cables that cannot be buried to the required depth due to bedrock or other limiting material. Impacts will be restricted to the existing cable crossing area and are not anticipated to result in any undue adverse impacts to wetland functions and values.

Additional information is included in the permit application narrative and associated NH SEC application materials.

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.

The SRP Project will have no impact upon the value of any sites listed on the National Register of Natural Landmarks. There are 11 sites designated as National Natural Landmarks in New Hampshire, only one of which is in the vicinity of the Project area, the Spruce Hole Bog site in Durham, NH. The Spruce Hole bog and surrounding Spruce Hole Conservation Area provide the Town of Durham with approximately 35.6 acres of permanent protection for land that sits atop the Spruce Hole Aquifer, a future public water supply. The bog is also adjacent to the Oyster River Forest, a permanently conserved 172± acre parcel owned by the Town of Durham. The SRP Project is located approximately 1.3 miles from the nearest boundary of the bog's conservation area. Several residential housing developments are located between the bog and the Project ROW. The Visual Assessment (VA) conducted for the SRP evaluated this area and determined that there will be "No Project Visibility." In addition, there will be no impacts within the Well Protection Area associated with the "future public water supply."

No other sites are identified on the National Natural Landmarks Program website as being eligible for designation and the last site designated in the state was finalized in 1987.

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

There are no rivers designated as wild and scenic within the project corridor (National Wild and Scenic River System 2012). There are no New Hampshire State Parks within the project corridor (New Hampshire Parks and Recreation 2012). The Oyster River and Lamprey River Watershed are Designated Rivers managed as an outstanding natural and cultural resource in accordance with New Hampshire RSA 483, The Rivers Management and Protection Act. The SRP will span the Oyster River and pass through portions of the Lamprey River Watershed. Direct impacts are not proposed to the Oyster River or any of the main stem rivers listed as a part of the Lamprey River Watershed. Temporary timber mat bridges will be utilized where small streams need to be crossed for clearing or construction activities with no impact to the bed or banks. Great Bay, which includes Little Bay, is part of the National Estuarine Research Reserve System (NERRS). Impacts have been minimized within the Little Bay area and measures will be taken during construction to minimize any temporary impacts associated with the installation of the cable(s). The cables will be located within a designated cable crossing area, which has been used in the past and still contains cables that are not currently in use. Proposed permanent impacts have been minimized and associated with required safety measures designed to maintain reliability and public safety.

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

This project does not propose to divert flow from one watershed to another.

Additional comments

None. Please refer to the project narrative, appendices and plans for additional details.

6 The Seacoast Reliability Project: Project Description & Existing Conditions Narrative

Project Purpose

The SRP is a reliability project. The purpose of SRP is to provide a parallel path to enhance the existing 115 kV loop between the Deerfield and Scobie Pond Substations in order to address reliability concerns in the New Hampshire Seacoast Region, which have previously been identified by the Independent System Operator – New England ("ISO-NE"). PSNH, working with ISO-NE, conducted a needs assessment study which concluded that the New Hampshire Seacoast Region requires additional transmission capacity to support the reliable delivery of electric power to meet the Region's current demand and future increased demand.

This Project is proposed as a part of PSNH's continued effort to provide high-quality service to the customers of New Hampshire and to meet reliability and other applicable benchmarks. It has been approved by ISO-NE as part of PSNH's Seacoast Reliability Solution. It is one of seven projects in the Solution; the other six are relatively minor in nature, including line upgrades, line uprates, and substation improvements.

Primary Project Overview

The Project consists of a new overhead 115 kV electric transmission line, which will be known as the Line F107, to be located primarily within existing corridors between the Madbury Substation and the Portsmouth Substation, and modifications at both substations where the line terminates (Figure 1). The Environmental Maps, Section 16 or SEC Appendix 2, and the F107 Line Structure Location Plans in the Engineering Design Drawings, SEC Appendix 5, depict the location of each major part of the proposed facility. PSNH has the necessary rights to construct and operate the new overhead 115 kV transmission line. The line will be comprised of overhead transmission structures and conductor, underground cable, submarine cable. The substation modifications consist of terminal structures, breakers, disconnect switches, protection and control equipment, and miscellaneous electric infrastructure. The Project is designed in compliance with Eversource design standards and the National Electrical Safety Code ("NESC").

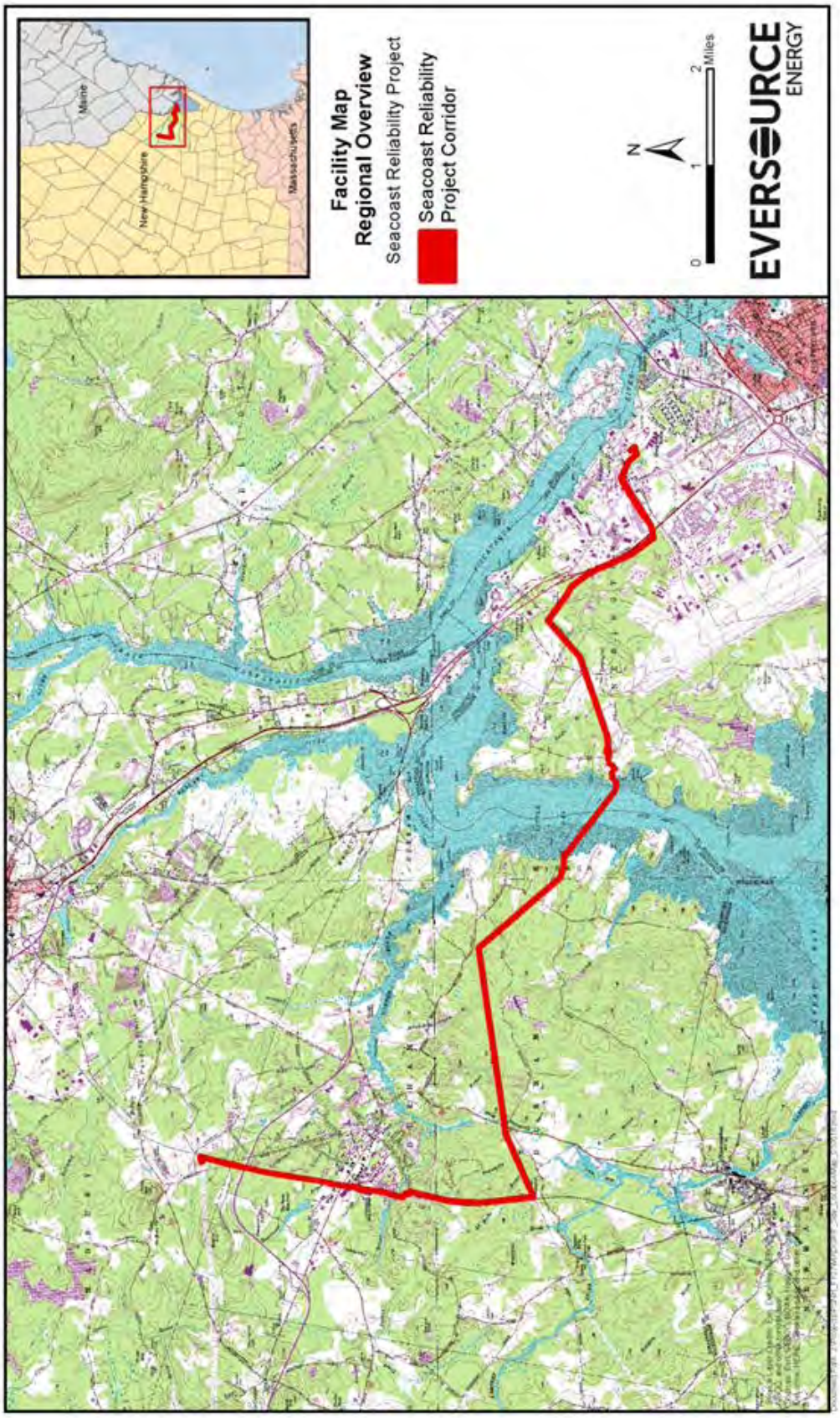

Figure 1. Overview Map of Seacoast Reliability Project (SRP)

A detailed description of the Project is described below.

Overhead Transmission

The proposed 115 kV transmission Line F107 will run approximately 12.9 miles from a new 115 kV bay at Madbury Substation to a new 115 kV bay at Portsmouth Substation. The transmission line will be located primarily within an existing electric utility corridor that is currently occupied by a 34.5 kV overhead distribution line supported by direct embedded wood pole structures. Circuits along the existing corridor include:

- 34.5 kV Line 380 from Madbury Substation (Madbury, NH) to Packers Falls Substation (Durham, NH),
- 34.5 kV Line 3162 from Packers Falls Substation to the west side of Little Bay (Durham, NH)
- 34.5 kV Line 3152 from Packers Falls Substation to Newmarket Road (Durham, NH)
- 34.5 kV Line 3850 from the east side of Little Bay (Newington, NH) to the proposed crossing of the Spaulding Turnpike (Portsmouth, NH).

Following the Turnpike crossing, the line will then be located within an existing transmission corridor with existing circuits Line E194 (115 kV), Line U181 (115 kV) & Line 3135 (345 kV). Portions of Line E194 will be rebuilt to provide adequate space within the existing corridor for Line F107.

The overhead portion of the Project will be constructed predominantly on single pole structures utilizing both vertical phase over phase and delta (triangular) phasing configurations, along with open wire distribution underbuild in a horizontal phasing configuration. The structure count for Line F107 is 150; the relocation of the E194 Line includes an additional four structures (for a total of 154 transmission structures that will be built). The majority of the new structures will be directly embedded self-weathering steel monopoles. Galvanized steel may be used in certain locations that are open or near other existing galvanized structures. Some structures are proposed to be self-weathering steel H-frames. In most locations, the proposed 115 kV overhead transmission line will be underbuilt with a 34.5 kV distribution line. Some locations will utilize either a single 115 kV line or new 115 kV line built on a single circuit line next to a relocated 34.5 kV line. In locations where the 34.5 kV lines are rebuilt on their own pole line, the 34.5 kV structures are proposed to be wood monopoles. Some structures, such as running angles and dead ends, will require the installation of guy wires or reinforced concrete drilled pier foundations. Typical transmission structure heights will vary between approximately 55 feet and 105 feet above grade with the most common height being 84 feet above grade. These heights will vary depending on terrain, required vertical clearance to ground, span length, underbuild, and other site specific conditions. *See* Engineering Design Drawings, SEC Appendix 5, for examples of the typical structure types to be used.

The overhead conductor will be a single 1590 kcmil 45/7 ACSR "Lapwing" per phase, while the rebuilt underbuild 34.5 kV circuits will be constructed utilizing a single 477 kcmil 18/1 ACSR "Pelican" per phase and one #4/0 AWG 6/1 ACSR "Penguin" neutral wire. The line will also

carry a new 24 count fiber optical ground wire ("OPGW"). In places without a fiber OPGW or in places where additional lightning protection is required, a 19#10 Alumoweld shield wire will be installed above the phase conductors.

Submarine / Underground Transmission

There will be two terrestrial sections of the new 115 kV line that will be constructed underground with three solid dielectric insulated cables installed in individual PE conduits. The proposed conductor size is 3,500 kcmil copper and each phase will have one cable. There will be one additional section of the new 115 kV line that will be constructed completely underwater with three specialized solid dielectric insulated submarine cables directly buried in the soft sediments across Little Bay. The proposed conductor size for the submarine cable is 2,763 kcmil (1400mm^2) copper and each phase will have one cable. An all-dielectric fiber optic cable ("ADSS") will be installed in all underground sections with two ADSS cables installed in the submarine portion. All underground and submarine cables have been designed as an extra high voltage, extruded dielectric ("HVED") cable utilizing cross-linked polyethylene ("XLPE") insulation.

A detailed description of the proposed facilities is provided below.

Madbury Substation to NH Route 4: Structures 1 to 10

This section of the Project will be located on collectively PSNH fee owned property, on a newly acquired easement, or for one structure, on NH Department of Transportation ROW. The new transmission line will be located approximately 40 feet west of the existing distribution circuit. The structures along this portion of the Project will be direct embedded monopole or H-frame tubular self-weathering steel structures. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. The proposed new line will support the three 115 kV phases in a horizontal, vertical or delta phasing configuration with only structures 1 and 2 in this section including the 34.5 kV underbuild. The new 115 kV overhead line conductors will be carried on steel davit arms with suspension insulators, or directly attached to the poles or structure cross arms on suspension insulators. The 34.5 kV underbuild will be in a horizontal phasing configuration attached by suspension insulators and/or post insulators. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. Structure heights will vary between approximately 55 feet and 98 feet above grade. Typical span lengths in this section will average approximately 310 feet.

Route 4 to University of New Hampshire Parking Lot A: Structures 10 to 23

This section of the Project is predominantly within an existing Pan Am Railroad corridor. Additionally, PSNH has contracted to expand the corridor to include 25 feet of new width on UNH property. One structure will be located entirely on new easement that PSNH has contracted to acquire on UNH property. The new transmission centerline will be approximately 50 feet from the newly acquired western corridor edge and 36 feet from the existing rail centerline. The transition structure placed on the newly acquired easement will be

approximately 95 feet west of the railroad centerline. The structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel or galvanized steel. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 350 feet. The new 115 kV overhead line conductors will primarily be in a delta phasing configuration on steel davit arms with suspension insulators or on braced post insulators, with the 34.5 kV underbuild in a horizontal phasing configuration attached by suspension insulators and/or post insulators. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. Structure heights will vary between approximately 80 feet and 95 feet above grade.

Structure 23 to UNH Waterworks Road: Underground Cable

This segment of the Project will be installed as an underground cable, in a buried duct bank consisting of PE and polyvinyl chloride ("PVC") conduits, on a newly acquired easement on UNH property. This segment will begin on a monopole self-supported self-weathering steel transition structure. The transition structure will be approximately 80 feet in height and will have the cable terminations and surge arresters located on davit arms in a delta configuration. The underground segment will continue approximately 2,100 feet along a new underground corridor located on University of New Hampshire property. The underground to overhead transition structure will be a monopole self-supported self-weathering steel structure approximately 80 feet in height and will have the cable terminations and surge arresters located on steel davit arms in a delta configuration.

The underground portion of the Project will consist of three solid dielectric insulated cables installed in individual PE conduits. The nominal trench for the duct bank will be five (5) feet wide by five (5) to twenty-two (22) feet deep. The duct bank will consist of four 8-inch diameter PE conduits, two 4-inch diameter PVC conduits for fiber-optic communication to protect the transmission lines, and one 2-inch diameter PVC conduit for a ground cable. The conduits will be directly buried with a minimum of 30 inches of cover, except for the section beneath Main Street, Durham. Due to the physical properties of fiber optic cable, the allowable pulling lengths cannot be as long as the underground power cable. As a result, handholes, which are approximately 5 feet wide by 7 feet long, are placed approximately every 600 feet along the underground route.

This portion of the line will be installed inside conduits within a reinforced concrete casing pipe installed beneath the road. The casing pipe will be installed beneath Main Street using a pipe-jacking construction method for a distance of approximately one hundred forty (140) feet.

UNH Waterworks Road to Packers Falls Substation: Structures 24 to 49

This section of the Project will be constructed within existing PSNH electric utility easements. The new transmission centerline will be located in the center of an approximately 100 foot wide corridor. The structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel or galvanized steel. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to

support the applied loads. Span lengths will average approximately 370 feet. The new 115 kV overhead line conductors will be primarily in a delta phasing configuration on steel davit arms with suspension insulators or on braced post insulators, with the 34.5 kV underbuild in a horizontal phasing configuration attached by suspension insulators and/or post insulators. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. Monopole structure heights will vary between approximately 80 feet and 100 feet above grade.

Packers Falls Substation to Structure 57: Structures 49 to 57

This section of the proposed Project will be constructed within existing PSNH electric utility easements. From Packers Falls Substation to NH Route 108, the new double circuit transmission line will share the 100-foot wide corridor with another existing 34.5 kV electric utility line. The new centerline will be offset parallel to the existing distribution circuit by approximately 37 feet and be located approximately 42 feet from the Northern corridor edge. The structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 350 feet. The new 115 kV overhead line conductors will be primarily in a delta phasing configuration on braced post insulators, with the 34.5 kV underbuild in a horizontal phasing configuration, attached by suspension insulators and/or post insulators. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. Monopole structure heights will vary between approximately 80 feet and 95 feet above grade.

Structure 57 to NH Route 108 & Longmarsh Road: Structures 57 to 62

This section of the proposed Project will be constructed within existing PSNH electric utility easements. From Packers Falls Substation to NH Route 108, the new double circuit transmission line will share the 100-foot wide corridor with another existing 34.5 kV electric utility line. The new centerline will be offset parallel to the existing distribution circuit by approximately 35 feet and be located approximately 45 feet from the northern corridor edge. The structures along this portion of the Project will be direct embedded multi-pole H-frame tubular self-weathering steel. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 380 feet. The 115 kV electric conductors will be in a horizontal phasing configuration attached to a horizontal crossarm by suspension insulators, with the 34.5 kV under build in triangular phasing configuration utilizing spacer cable connected to a messenger cable attached to one of the 115kV poles on triangular shaped spacer insulators. Intermediate single wood stub poles will be installed to support the spacer cable on long spans. Multi-pole H-frame structure heights will vary between approximately 50 feet and 80 feet above grade. Single wood stub poles will vary between approximately 30 feet and 35 feet above grade. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms.

Longmarsh Road to Timberbrook Lane: Structures 62 to 64

This section of the proposed Project will be constructed within existing PSNH electric utility easements. The new transmission centerline will be located approximately 40 feet from southern edge of the approximately 100 foot wide corridor. The existing 34.5 kV line will be relocated to approximately 30 feet off the northern edge of the corridor. The 115kV structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 400 feet. The new 115 kV overhead line conductors will be in a delta phasing configuration on braced post insulators. The 34.5 kV line will be direct embedded wood poles. The new 34.5 kV overhead line conductors will be in a horizontal phasing configuration on post insulators on a wood or fiberglass crossarm. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. The new 115kV monopole structure heights will vary between approximately 70 feet and 80 feet above grade. The new 34.5kV structure heights will vary between approximately 40 feet and 45 feet above grade.

Timberbrook Lane to Durham Point Road: Structures 64 to 94

This section of the proposed Project will be constructed within existing PSNH electric utility easements. The new transmission centerline will be located in the center of an approximately 100 foot wide corridor. The structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 400 feet. The new 115 kV overhead line conductors will be primarily in a delta phasing configuration on steel davit arms with suspension insulators or braced post insulators, with the 34.5 kV underbuild in a horizontal phasing configuration attached by suspension insulators and/or post insulators. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. Monopole structure heights will vary between approximately 85 feet and 105 feet above grade.

Durham Point Road Crossing: Structures 94 to 96

This section of the proposed Project will be constructed within existing PSNH electric utility easements. The new transmission centerline will be located approximately 40 feet from the northern edge of the approximately 100 foot wide corridor. The existing 34.5 kV line will be relocated to approximately 30 feet off the southern edge of the corridor. The 115kV structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 410 feet. The new 115 kV overhead line conductors will be primarily in a delta phasing configuration on braced post insulators. The 34.5 kV line will be direct embedded wood poles. The new 34.5 kV overhead line conductors will be in a horizontal

phasing configuration on post insulators on a wood or fiberglass crossarm. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. The new 115kV monopole structure heights will vary between approximately 80 feet and 95 feet above grade. The new 34.5kV structure heights will vary between approximately 40 feet and 45 feet above grade.

Durham Point Road to Little Bay Crossing: Structures 96 to 101

This section of the proposed Project will be constructed within existing PSNH electric utility easements and will consist only of the new 115 kV overhead transmission line. The new transmission centerline will be located in the center of an approximately 100 foot wide corridor. The structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel with some multi-pole horizontal configuration structures. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 450 feet. The new 115 kV overhead line conductors will be primarily in a delta phasing configuration on steel davit arms with suspension insulators or braced post insulators. Some structures will utilize multi-pole horizontal configurations with the conductor attached on a crossarm with suspension, or strain, insulators. Shield wires will be attached directly to the structures at the poles or on steel davit arms. Structure heights will vary between approximately 66 feet and 85 feet above grade.

Little Bay Crossing: Submarine Cable

This section of the proposed Project will be installed as a submarine cable. The cables will be installed in the existing, charted cable corridor across Little Bay. The existing cable corridor is approximately 1,000 feet in width. The transition from overhead to submarine cable on the western shore will occur on a monopole self-supported weathering steel structure. The pole will be approximately 80 feet in height and will have the cable terminations and surge arresters located on davit arms in a delta configuration. The submarine cable will proceed underground from the transition structure approximately 360 feet to the edge of Little Bay. From there the submarine cable will cross the bay a distance of approximately 5,470 feet and terminate in an underground vault on the eastern shore of Little Bay.

The proposed submarine cable design will consist of three individual solid dielectric insulated cables directly buried in the soft sediments across the bay. The cables will include a lead sheath to prevent water ingress and will also have an outer metallic armoring (copper wires) to provide mechanical strength during cable installation and retrieval activities. A fiber optic cable will be bundled with two of the three conductors to allow for a communication path. The nominal depth of burial for each cable is 42 inches in the shallow mud flats on the western shore and eight (8) feet in the deeper portions of the bay. Each cable will be separated by a distance of approximately 30 feet to prevent inadvertent mechanical damage during subsequent cable installation activities.

Little Bay Crossing to Little Bay Road: Underground Cable

This segment of the Project will be installed as an underground cable in a buried duct bank consisting of PE and PVC conduits. This segment will begin at a new precast concrete manhole located in the corridor on the eastern side of Little Bay in Newington and will proceed approximately 340 feet easterly to Gundalow Landing Circle in Newington. The underground segment will continue approximately 1,120 feet along Gundalow Landing Circle within the public ROW to three self-supported steel transition structures located approximately 10 feet off Little Bay Road. The total length of the underground segment is approximately 1,470 feet. The transition structures will be approximately 65 feet in height and will have the cable terminations and surge arresters located on davit arms in a horizontal configuration.

The proposed underground transmission line will consist of three solid dielectric insulated cables installed in individual PE conduits. The nominal trench for the duct bank will be five (5) feet wide by five (5) to eight (8) feet deep. The duct bank will consist of four 8-inch diameter PE conduits, two 4-inch diameter PVC conduits for fiber-optic communication to protect the transmission lines and one 2-inch diameter PVC conduit for a ground cable. The conduits will be directly buried with a minimum of 30 inches of cover. Due to the more delicate nature of fiber optic cable the allowable pulling lengths cannot match the underground power cable. As a result handholes, which are approximately 5 feet wide by 7 feet long, are placed approximately every 600 feet along the underground route.

Little Bay Road to Fox Point Road: Structures 102 to 115

This section of the Project will be constructed within existing PSNH electric utility easements and will consist only of the new 115 kV overhead transmission line. The new transmission centerline will be located in the center of an approximately 100 foot wide corridor. The structures along this portion of the Project will be direct embedded monopole, tubular self-weathering steel with some multi-pole horizontal configuration structures. The running angle and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 520 feet. The existing 34.5kV line will be removed in this section of the corridor. Some of the new 115 kV overhead line conductors will be in a delta phasing configuration on steel davit arms with suspension insulators. Others structures will utilize multi-pole horizontal configurations with the conductor attached directly to the pole or on a horizontal crossarm with suspension insulators. Shield wires will be attached directly to the structures at the poles or on steel davit arms. Structure heights will vary between approximately 60 feet and 85 feet above grade.

Fox Point Road to Spaulding Turnpike Crossing: Structures 115 to 137

This section of the Project will be constructed within existing PSNH electric utility easements. The new transmission centerline will be primarily located approximately 40 feet from southern edge of the approximately 100 foot wide corridor. The existing 34.5 kV line will be relocated to approximately 30 feet of the northern edge of the corridor. The 115 kV structures along this portion of the Project will be direct embedded monopole tubular self-weathering steel. The running angle and dead end structures will require the installation of guy wires or reinforced

concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 420 feet. The new 115 kV overhead line conductors will primarily be in a delta phasing configuration on steel davit arms with suspension insulators or braced post insulators The 34.5 kV line will be direct embedded wood poles. The new 34.5 kV overhead line conductors will be in a horizontal phasing configuration on post insulators on a wood or fiberglass crossarm. A portion of the line in this segment will transition to double circuit direct embedded monopole, tubular self-weathering steel structures. Conductors will be in a delta phasing configuration on steel davit arms with suspension insulators, with the 34.5 kV underbuild in a horizontal phasing configuration. Shield wires and neutral conductors will be attached directly to the structures at the poles or on steel davit arms. The new 115 kV monopole structure heights will vary between approximately 65 feet and 100 feet above grade. The new 34.5 kV structure heights will vary between approximately 35 feet and 70 feet above grade.

Spaulding Turnpike Crossing to Structure 142: Structures 137 to 142

After crossing Spaulding Turnpike, the proposed Project will be constructed within an existing 300 foot wide PSNH electric utility easement. Structures along this portion of the Project will be direct embedded monopole, or H-Frame, tubular self-weathering steel. Some tangent, running angle, and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 435 feet. The 115 kV phase conductors will be in a horizontal phasing configuration with no distribution underbuild. Shield wires will be attached directly to the structures at the poles or on steel davit arms. Structure heights will vary between approximately 70 feet and 85 feet above grade.

Spaulding Turnpike Crossing to Portsmouth Substation: Structures 142 to 151

After crossing Spaulding Turnpike, the Project will be constructed within an existing 300 foot wide PSNH electric utility easement. This corridor currently includes two other 115 kV lines (U181 & E194) and one 345 kV line (3135). To make room for Project, portions of the existing 115 kV Line E194 will be relocated approximately 25 feet north of its existing location. The E194 structures will be constructed of monopole tubular self-weathering steel on a drilled pier foundation. The proposed new F107 Line will be approximately 37 feet south of the rebuilt Line E194, 50 feet north of the existing Line U181 and 125 feet north of the existing Line 3135. Structures along this portion of the Project will be direct embedded monopole, or H-Frame, tubular self-weathering steel. Some tangent, running angle, and dead end structures will require the installation of guy wires or reinforced concrete drilled pier foundations to support the applied loads. Span lengths will average approximately 380 feet. The 115 kV phase conductors will be in a horizontal, vertical, or delta phasing configuration with no distribution underbuild. The new 115 kV overhead line conductors will be carried on steel davit arms with suspension insulators, or directly attached to the poles or structure cross arms on suspension insulators. Shield wires will be attached directly to the structures at the poles or on steel davit arms. Structure heights will vary between approximately 30 feet and 95 feet above grade.

Madbury and Portsmouth Substations

Two PSNH substations will require modifications as part of this Project. Madbury Substation, off Miles Lane in Madbury, NH, and Portsmouth Substation at 280 Gosling Road in Portsmouth, NH, are being upgraded to accept a new line terminal position for the new F107 Line. There will be no expansion of the site or fenced area at either substation. All work will be occurring inside the existing fenced areas.

At Madbury Substation, there is an existing steel terminal structure, approximately 50 feet tall, already in place to accept the new line. Structural modifications will be performed on this terminal structure, and include the installation of steel bracing as well as modifications to the existing foundation. In addition to this structure work, a new 115 kV disconnect switch and circuit breaker will be installed. This will allow the new transmission line to be isolated from the rest of the electrical bus, protect critical station components from damage during a line fault, and allow for de-energization of the line for maintenance. Additionally, new coupling capacitor voltage transformers ("CCVTs") and lightning arrestors will be installed. The fiber optic cable from the new transmission line will be tied into the existing control enclosure to connect into PSNH's existing communication network. A 55 foot wood pole will be installed so that the fiber optic cable from the transmission line can be tied into the existing substation control closure. Additional controls and relaying for the new line will be installed in the existing control enclosure. There will be no expansion of the existing enclosure.

At Portsmouth Substation, a new bus extension will be installed with a new 50 feet tall galvanized steel terminal structure with two 10 feet tall lightning rods required to support the F107 Line. This work will include installation of rigid aluminum bus from an existing switch to the proposed location for the new line terminal structure. A new 115 kV disconnect switch will be installed on top of the terminal structure. Additionally, a new 115 kV circuit breaker, three CCVTs and lighting arrestors will be installed. This will allow the new transmission line to be isolated from the rest of the electrical bus, protect critical station components from damage during a line fault, and allow for de-energization of the line for maintenance. The fiber optic cable from the new transmission line will be tied into the existing substation control enclosure to connect into PSNH's existing communication network. New control cabinets and relays will be installed within the control enclosure to accommodate the proposed line. Due to limited room in the existing enclosure, the enclosure will be expanded approximately 30 feet to the northeast. This expansion will be supplied with power from three new station service voltage transformers ("SSVT") which will be installed on the 115 kV bus. The expanded control enclosure will be a reinforced masonry building with wood truss roof. The exterior will be sided with vinyl siding and asphalt shingles to match the existing facility.

Description of General Environmental Setting

Existing Natural Resources

Upland Plant Communities

The SRP is located within the Coastal Plain ecological region of New Hampshire. The highest elevation along the project corridor is approximately 130 feet above sea level near the Madbury Substation. Based on the NHF&G 2010 Wildlife Action Plan (WAP) cover type map and field observations, habitat cover types through which the project corridor passes consist mostly of Appalachian oak-pine forest, with smaller areas of marshes, floodplain forest and grasslands. The Appalachian oak-pine forests are found across the subtle ridges and rises within the landscape, with the depressions and low areas consisting mostly of larger wetland complexes.

The Appalachian oak and pine forests are common throughout southern New Hampshire on dry to dry-mesic glacial till soils and on sand plain features. Good examples of mesic Appalachian oak – hickory forests are known near Little Bay and have a mix of canopy species including white, black, scarlet and red oaks, shagbark hickory, white ash, white pine, and other species common in more northern portions of New Hampshire such as birches, maples and beech (Sperduto and Kimball, 2011). Understory species include Canada mayflower, poison ivy, wild sarsaparilla, and other low herbs and forbs.

The residential and open areas are planted with common landscaping species and lawn grasses and escaped ornamental species are common in close proximity to residential areas. Escaped invasive species were noted in many of the identified wetlands throughout the project ROW.

The vegetation communities within the corridor differed substantially from adjacent areas due to the routine vegetation management for the existing electric line. Relatively few trees occur within the corridor, with the majority of species consisting of shrubs and herbs. Common shrub species within upland areas included glossy buckthorn (*Rhamnus frangula*), multi-flora rose (*Rosa multiflora*), sumacs (*Rhus sp*), and dogwoods (*Cornus sp.*). Clovers (*Trifolium sp.*), hayscented fern (*Dennstaedtia punctilobula*), goldenrods (*Solidago sp.*), raspberries and blackberries (*Rubus sp.*), and plantain species (*Plantago sp.*) were frequently noted upland herbaceous plants in the ROW.

The state-Endangered crested sedge, *Carex cristatella*, and four exemplary natural communities (all in the Great Bay Estuary) were documented within the SRP corridor. See the Rare, Threatened, and Endangered Species and Exemplary Natural Community Report (Appendix C) for more information.

Wetland Plant Communities

Wetlands identified within the project ROW were generally dominated by both scrub-shrub and emergent (herbaceous) plant species. Common woody species include glossy buckthorn, silky dogwood (*Cornus amomum*), speckled alder (*Alnus incana*) and several meadowsweet (*Spiraea sp.*) species. Herbaceous species included sedges (*Carex sp.*), cattails (*Typha sp.*), several hydrophytic fern species including sensitive (*Onoclea sensibilis*), cinnamon and interrupted

varieties (*Osmunda cinnamomea* and *O. claytoniana*), rushes (*Scirpus sp.*), and other species such as tearthumb (*Polygonum sp.*), asters (*Symphyotrichum sp.*), and purple loosestrife (*Lythrum salicaria*), which is an invasive species. Few trees were observed within the wetland due to routine clearing; however red maple (*Acer rubrum*), swamp white oak (*Quercus bicolor*), and cedar (*Thuja sp.*) were mentioned in field observations and data forms.

See Natural Resources Existing Conditions Report (Appendix A) for additional detail.

Wetland and Stream Delineations (Wt 301.01)

Wetlands

Wetlands were delineated by experienced wetland scientists in 2013, 2014 and 2015 according to the criteria established by the USACE in the *1987 Corps of Engineers Wetlands Delineation Manual* and the relevant version of the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* for a routine delineation. Wetland boundary flags were located by Normandeau with a Trimble® handheld GPS, which is capable of sub-meter accuracy after post processing. The data was then overlaid onto an aerial base maps. The wetland boundary delineation work was completed and supervised by several Certified Wetland Scientists (CWS) including Sarah Allen (CWS# 083), William McCloy (CWS# 268), Daniel Coons (CWS #264), Erik Lema (CWS# 286), Ian Broadwater (CWS# 162) and Jennifer West (CWS# 015). Corps field data sheets were completed at several locations and are attached, along with photos of the wetlands to be impacted by the project. Wetlands were classified by the USFWS method (Cowardin et al. 1979).

Stream surveys included delineation of the top of bank and mean annual high water (first observable slope break and vegetation change). The State regulates activity in the river channel and the bank below the first observable slope break. Streams will be temporarily spanned with timber mats bridges, and no permanent culverts are planned. Temporary culverts are proposed under two work pads and a temporary diversion for installation of a portion of underground line is proposed; however these areas will be immediately restored. Therefore, additional stream data normally collected for stream crossings, such as watershed area, are not presented.

Vernal Pools

Potential vernal pools were identified during the 2013 wetland delineations. Each potential vernal pool encountered was then resurveyed during the springs of 2014 and 2015 vernal pool species breeding season for egg masses and/or larvae of amphibian vernal pool indicator species. A dip net was also used to survey for amphibian larvae and invertebrates. Vernal pools were identified in accordance with the NHDES Wetland Rules (Env-Wt) 101.99 and Env-Wt 301.01, and procedures described in *Identification and Documentation of Vernal Pools in New Hampshire*, 2nd Ed. 2004, published by the New Hampshire Fish and Game Department.

The follow-up investigations of potential vernal pools did not yield the requisite indicator species or the permanent hydroperiod did not meet the definition of a vernal pool, and therefore no vernal pools are located within the project ROW.

Streams and Waterbodies

The entire ROW study area is located in the Salmon Falls-Piscataqua River watershed (HUC8) of the larger Saco River basin (HUC6). The study area contained 18 perennial streams. These include Beards Creek, College Brook, Reservoir Brook, the Oyster River and several unnamed tributaries to the Oyster River, two reaches of LaRoche Brook (both located within the Lamprey River Watershed), Beaudette Brook, and Longmarsh Brook along with other unnamed drainages. Seven intermittent stream segments, including Hamel Brook, were also identified. The SRP crosses the Oyster River in Durham, which is a Designated River and as such is managed and protected for its outstanding natural and cultural resources in accordance with RSA 483, The Rivers Management & Protection Act (New Hampshire Department of Environmental Services 2011) and also subject to the requirement promulgated in the SWQPA. The SRP also passes through a small portion of the Lamprey River Watershed, which is also designated; however none of the river segments or tributaries listed in the designation report will be crossed. Pursuant to RSA 482-A:3,I(d)(2) the application and supporting materials have been sent by certified mail to the Oyster River and Lamprey River Watershed Local Advisory Committees.

A Shoreland Permit application has been filed with the NHDES Shoreland Department for impacts proposed within the buffers associated with the Oyster River and Little Bay.

Rare, Threatened and Endangered (RTE) Species

State- and federally-listed threatened or endangered species, rare or special concern species and exemplary natural communities are tracked by New Hampshire Natural Heritage Bureau (NHNHB). NHNHB database searches were requested in 2013, 2014 and 2015, and the appropriate surveys were conducted along the proposed Project area was conducted. The complete response, including maps, is attached (Appendix C).

RTE Plants and Natural Communities

On September 24 and 25, 2013, October 30, 2013, and May 20, 2014, Normandeau personnel surveyed targeted areas of the SRP area for rare, threatened or endangered (RTE) plant species and exemplary natural communities. The searches were conducted based on RTE data that the New Hampshire Natural Heritage Bureau (NHNHB) provided to Normandeau in 2013 (NHNHB 2013). In 2014, NHNHB provided Normandeau with an updated list of RTE species and exemplary natural communities in the vicinity of the site (NHNHB 2014a, b). The updated list contained two new RTE plant species, including a federally threatened species, and two new natural community types. Areas of the site containing potential habitat for the other RTE plant species were visited by Normandeau personnel in 2015, but the species were not observed. Normandeau botanists returned to the project area in July 2015, and identified the state-listed plant species, the state-Endangered crested sedge (*Carex cristatella*). Four exemplary natural communities or natural community systems have also been documented within the Project Area in Little Bay: *High salt marsh, Salt marsh system, Sparsely vegetated intertidal system* and *Subtidal system*.

No federally-listed threatened or endangered species were observed.

Coordination with the NHNHB occurred during a pre-application meeting with Melissa Coppolla, other agency representatives, PSNH and Normandeau on January 6, 2015 to discuss the protection of rare species during project work. A follow-up meeting occurred with Amy Lamb at NHNHB in August, 2015.

Impacts to the crested sedge habitat will be avoided entirely, with the exception of one small area where timber mats will be employed. This species requires open habitat, so the clearing of trees in the vicinity of the known population may benefit this species.

A narrow fringe of salt marsh will be temporarily impacted on both shores of Little Bay during cable laying. Prior to construction, salt marsh peat will be salvaged within the impact area and stockpiled for replacement during restoration. The stockpiled peat blocks will be protected and maintained for the duration of the installation period. Immediately upon completion of construction, the underlying gravel substrates will be restored to match surrounding elevations. The peat blocks will be replaced and anchored with rebar stakes driven into the gravel and/or adjacent peat. Any open interstices between the peat blocks will be filled with a mixed sand to cover exposed roots and maintain grades. The seaward face of the restored peat will be protected from ice and wave action with a coir log.

The intertidal flats and subtidal bottom will be allowed to restore and recolonize naturally after completion of the cable installation. The jetplow process will disturb sediments while laying the cable, but the water pressure of the jets and the speed of the plow will be controlled to maximize the return of sediments to the trench and minimize sediments going into suspension in the water column. The currents within the channel and wave and ice action on the tidal flats are expected to restore existing bottom contours in the vicinity of the trenches, followed by recolonization of benthic infauna and ultimately shellfish after completion of construction. Monitoring of all impacted tidal and freshwater resources will occur both during and after construction to assess the success of the habitat restoration.

RTE Wildlife

An evaluation of the wildlife habitat for the project corridor was conducted using aerial photography and other GIS data combined with site visits in specific locations. The lands surrounding the SRP have a low to moderate amount of development, including some protected conservation lands, substantial areas of low density residential development, and some areas of higher intensity development associated with Durham and Newington/Portsmouth. The undeveloped areas and low density residential areas are primarily forested while the vegetation maintenance practices conducted in the existing cleared corridor create grass and/or shrubby habitat types. Shrublands and grasslands are a required resource for many types of wildlife and are also relatively rare in New Hampshire's predominantly forested landscape. Although narrow (approximately 60 feet wide), the existing cleared corridor provides some relatively valuable habitat resources for grassland/shrubland species, and may also provide a dispersal corridor for species that depend on grassy and/or shrubby habitats.

The SRP corridor crosses though some areas designated as Highest Priority Habitat by the NH Wildlife Action Plan. The remainder of the corridor passes primarily though areas that are

designated as Supporting Landscapes or that have no designation at all. The relative proportion of these habitat types in the corridor reflects their wider distribution in the surrounding landscape. The results of field surveys and desktop analyses indicate that the Project corridor may provide habitat for eight special status wildlife species, consisting of the ringed boghaunter (*Williamsonia lintneri*), northern black racer (*Coluber constrictor constrictor*), Blanding's turtle (*Emydoidea blandingii*), spotted Turtle (*Clemmys guttata*), bald eagle (*Haliaeetus leucocephalus*) osprey (*Pandion haliaetus*), northern long-eared bat (*Myotis septrionalis*), and the New England cottontail (*Sylvilagus transitionalis*). While a number of these species may use the corridor for portions of their life cycle, the New England cottontail is dependent on early successional habitat such as shrub and grasslands, and is declining throughout its range as these habitats mature or are developed. PSNH is actively working with NH Fish and Game to manage transmission corridors to benefit New England cottontail. The SRP corridor passes through UNH's Foss Farm and NH Fish and Game's LaRoche Brook parcel, both of which are being actively managed for this species, although New England cottontail has not yet been found at the site. The SRP corridor clearing will supplement that habitat and provide a connective route for the rabbit to disperse to other suitable habitats.

Permanent impacts of the Project include placement of new structures, removal of existing wooden poles, and vegetation clearing to remove trees for up to 100 feet within the ROW. Temporary impacts include mowing the work area, matting in wetlands to provide access for construction equipment, trenching (cut and cover) in the sections proposed for underground cable on land, and use of a jetplow to bury three cables under Little Bay.

In general, impacts to wildlife as well as protected species will be managed through species-specific management and standard Best Management Practices during construction. Examples include pre-construction surveys to ensure the absence of nesting bald eagles and osprey (if either species is breeding within or near the ROW, time-of-year restrictions may apply); surveys during construction to clear the work area of turtles and snakes; hand-cutting in the vicinity of the ringed boghaunter habitat in the unlikely case that larvae use the marginal habitat in the ROW; and minimization of clearing preferred shrubby areas in high priority New England cottontail habitat.

Seacoast Reliability Project Construction Methods

The Project will be constructed, operated, and maintained in accordance with federal, state, and local regulatory requirements, established industry practices, and PSNH policies and specifications. Applicable BMPs will be implemented as applicable during the construction of the Project.

Additional BMPs and industry standards and guidelines, applicable to transmission line construction activities within New Hampshire include, at least, *Best Management Practices Manual for Utility Maintenance in and adjacent to Wetlands and Waterbodies in New Hampshire*[2]; *Rock*

[2] http://www.nhdfl.org/library/pdf/Publications/DESUtilityBMPrev3.pdf

Blasting and Water Quality Measures That Can Be Taken To Protect Water Quality and Mitigate Impacts[3]; *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire*[4], and BMP worksheets provided on the Alteration of Terrain website.[5]

BMPs such as *Best Management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment* (WD-DWGB-22-6)[6] will be followed to prevent spills of fuel and other hazardous materials during all construction and clearing activities where equipment is refueled in the field.

The primary goal of these various BMPs is to use techniques that protect natural resources from unnecessary impacts. In addition to BMPs, there are many Project-specific or species-specific timing restrictions, preconstruction surveys, and monitoring techniques that will be used to avoid direct impacts to certain wildlife species. The Project has committed to following these BMPs, conditions, timing restrictions, and guidelines where applicable. BMPs have also been incorporated into the draft Project Construction Plan and will be incorporated into contractor bid documents.

Proposed BMPs include, but are not limited to, the following:

- Seasonal Restrictions (in critical locations, for protection [as needed] of, raptors, bats, etc.);
- Construction mat use in sensitive areas;
- Ground-based construction techniques and use of smaller, lighter equipment, or low pressure equipment, if practicable within sensitive areas;
- Fenced exclusion zones and wildlife survey areas (for species protection); and
- On-site construction monitoring (to monitor permit compliance, protection of resources, and erosion and sedimentation ["E&S"] control maintenance).

In addition to the Project Construction Plan, permitting plans, BMPs, and standard and Project-specific permit conditions, specific guidance for working in sensitive areas and E&S controls, etc. will be provided to the contractor and their contracts will include obligations to comply with all applicable laws, regulations, and permits. Environmental inspectors (as needed) will also be in the field during construction to monitor compliance with plans and permits and to address unanticipated natural and cultural resource issues that may arise.

Construction Procedures

Overhead Line Construction

New overhead line construction generally occurs in a well-established sequence. While some work activities on a given site may overlap, generally they occur sequentially. It is expected

[3] http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf
[4] http://www.nhdfl.org/library/pdf/Publications/BMPs%20erosion%20control%202004.pdf
[5] http://des.nh.gov/organization/divisions/water/aot/categories/forms.htm
[6] http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-22-6.pdf

that work at multiple sites will occur simultaneously in order to meet the project milestones for energization. In some areas existing infrastructure or existing lines may need to be re-located prior to the construction of the new overhead lines. The relocations will be planned and included as part of the construction sequencing activities.

Initially, the first activity is surveying/flagging/re-flagging the ROW to identify access roads, structure locations, and sensitive resource areas. Vegetation clearing will occur next (see Section 4.3 below for more details). Erosion control measures are installed following vegetation clearing, prior to ground disturbance, and maintained until disturbed areas have been restored. The ROW are cleared of trees and brush to provide the necessary access for construction equipment and a safe work area for crews. Clearing the ROW provides for an environment that safely and reliably supports the construction and ongoing operation of the transmission lines.

Construction vehicles must be able to access the location of each structure that will support the transmission lines. BMPs such as *Best Management Practices for Fueling and Maintenance of Excavation and Earthmoving Equipment* (WD-DWGB-22-6)[7] will be followed to prevent spills of fuel and other hazardous materials during construction and clearing activities where equipment is refueled in the field. Access roads are established, typically utilizing existing roads, developing new roads or by placing timber mats. Timber mats may be used in or around wetlands and to protect environmentally sensitive areas. Silt fencing and other environmental controls are also used to stabilize the soil and protect wetlands during construction. With the consent of property owners, gates are placed across new access roads where these intersect with town or state roads. Gates help deter unauthorized access to the ROW. By landowner request, gates are also installed where access roads cross agricultural land containing livestock. Access road/work area development averages two to three days on each property.

The next step in the construction process is to drill foundations for the new monopole transmission structures. This involves drilling large holes, which are then typically filled with concrete for the steel structure foundation. Drilling operations occur for a few days at each new structure location. Once drilling is complete, a steel rebar cage is placed in each hole and concrete is poured to create a secure foundation for the new steel structure. Concrete trucks are used to deliver the concrete mix for the foundations.

Some structures (such as steel or wood pole single pole or H-frame structures) are installed via direct-embed where a hole is excavated, rock drilled or blasted (where necessary due to bedrock) to the required depth based on the height of the structure, the base of the structure is inserted, and the hole is filled with a suitable backfill, rather than concrete.

Once the foundation is cured for drilled pier structures, transmission structure installation can begin. The crews will begin framing, erecting and setting the structures. The erection crews will likely utilize temporary crane pads which are approximately 5,000 to 14,000 square feet.

[7] http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-22-6.pdf

These are used to stage structure components for final on-site assembly and to provide a safe, level work base for the construction equipment used to erect transmission structures. The new steel structures often come in sections that are assembled on or near the foundation. Cranes and/or bucket trucks are used to lift the structures and set them into position on the foundations. Grounding will be achieved at the location of each new structure once installation is complete.

With the new structures in place, the next step is to install the wire ("conductor"). The wire-stringing operation requires equipment at each end of the section that is being strung including a small work pad approximately 75 feet by 300 feet that is used for material and the puller and tensioner equipment. Wire is pulled between these "pulling sites" through stringing blocks (pulleys) at each structure. These pulling sites are set up at various intervals along the ROW. Typically wire pulls are several miles in length. Specific pulling sites are determined close to the time the stringing activity takes place. Once the wire is strung, the stringing blocks are removed and the wire clipped into its final hardware attachment. Helicopters can also be used during wire stringing operations. After construction activities are completed, disturbed areas will be restored to original or improved condition. Native shrubs and ground cover are allowed to regrow. Environmental controls are removed, though some may remain until the area is stabilized.

Distribution lines are the lower-voltage power lines that bring electricity to customers' homes. Sometimes, these lines are on transmission ROW, as is the case for the SRP. During construction, the removal of existing lines is carefully coordinated with the installation of new lines to allow workers to safely perform construction while customers continue to receive electrical power with no loss of service. The existing distribution line associated with the SRP ROW will be under-built, or located on the same new transmission structures underneath the new transmission conductors for most sections of the project. The old distribution structures will be removed and hauled away.

Where relocations are required, new distribution poles and wires are first installed in an alternate section of the ROW. In Newington Village, the distribution will be removed from the ROW entirely, and strung on existing poles along roadsides. Once complete, the existing distribution line is de-energized so that power can be transferred to the newly built line. The de-energized lines are then removed so that transmission line construction can continue.

Existing structures that require removal are de-energized and the overhead wires removed. Concrete foundations (where applicable) or the wooden butt-ends of the old structures are removed below grade and the area is filled and stabilized. All of the demolition debris such as wood poles, steel structures, insulators, conductor and concrete is taken off-site to an approved waste management facility for recycling or disposal.

Underground Line Construction

The underground line construction will progress in a linear approach similar to that of installing a water or sewer main. It is expected that work at multiple sites will occur simultaneously in order to meet the project milestones for energization and will begin by first

performing survey, staking and protection of any sensitive areas, and contacting Dig Safe for demarcation of existing utilities. The installation of the underground transmission line will follow the existing ROW or road alignment to the extent possible and will include sections that are either under the roadway, in the roadway shoulder or in undeveloped areas. Where the installation is in paved road, the pavement will be saw cut on both sides of the trench to limit impact to the road surface. In undeveloped locations, temporary roads will be constructed for safe, efficient and environmentally compliant access to the work. The trench will be excavated to the design depth and the sidewalls shored for support to allow safe worker access and protect the public. Conduits will be installed into spacers to maintain their position in the trench. The conduits will be either backfilled with a granular material or a high slump concrete, then capped with a layer of concrete for protection against accidental dig-ups. Any temporary shoring will be removed as the trench is backfilled. After backfill, roadways will be restored and paved and undeveloped areas will be restored.

Trenches terminate either at splice pits or vaults. The conduit systems will be "proofed' or tested by pulling a specified dimensional mandrel through the duct from splice location to splice location. After installation and testing of the duct bank, vault and transition structure system, the conductors will be pulled to the splice locations. Conductors will be spliced in the pits, vaults or terminated at the underground to overhead transition structures. When an underground section is complete there will be a series of electrical tests performed on the cable before it is energized.

Typical techniques used for the underground construction are open trenching and direct bury duct banks with concrete caps, both described above. In some locations the use of a pipe jacking may be required.

Pipe jacking and micro-tunneling can be used for short distances when crossing under a railroad or highway particularly when depths exceed 20 feet. For this application, a reinforced jacking pit will be constructed to the depth of the proposed bore and similarly a reinforced receiving pit will be constructed at the termination point of the pipe. A concrete reaction wall will be poured inside the jacking pit opposite the exit point of the bore. Hydraulic equipment used to push the pipe string will be set up in the jacking pit. In Pipe jacking, the pipe is pushed along its path, and spoils will be removed from the inside of the pipe by auger or by hand. Micro-tunneling is very similar to Pipe jacking, except a remote controlled boring machine goes along the bore path first excavating ahead of the pipes which are jacked in behind it as the spoils are removed. Alignment of the pipe will be monitored, and adjustments made as required until the pipe reaches the termination point in the receiving pit.

A cable manhole will be installed on the east side of Little Bay where the line will be split for the submarine portions of the project. The manhole provides a protected location for making cable splices, and facilitate replacement cable installation when necessary. Typical manholes are constructed of precast concrete and are likely to be 6 x 10 x 30 feet. The manhole will be buried with two manhole covers at grade.

Underground cable is installed using puller/tensioner equipment. A cable reel trailer with a braking system or tensioner will be stationed at one end of the pull and a cable puller will be

stationed at the other end. The puller will utilize a wire rope attached to the end of the conductor to pull the conductor through the duct system.

Submarine Line Construction

Three submarine cables will be laid and buried beneath the soft sediments of the bay floor using three methods. The primary installation method uses a jet plow in the subtidal and most of the intertidal zone. Other cable installation methods will include diver burial in the shallow intertidal zone and excavation for cable trenches in the transition zone from marine to the terrestrial structures. The cable will be buried to a target depth of eight (8) feet in the subtidal zone and forty two inches (42) in the intertidal zone and on land.

The submarine cables will be transported to the site individually on a specially outfitted cable laying barge. Beginning on the west shore, the cable laying barge will be positioned approximately 250 feet seaward of the trench and the cable will be "pulled" into position on shore by a wire rope and winch located on shore. Once the cable has been secured at the landing site, the cable lay barge will slowly move forward under anchor winches. While the barge is moving forward, the cable will be paid out as necessary until the jet plow starts to move.

The jet plow utilizes high-volume water pressure to temporarily liquefy the soft sediments immediately ahead of the plow blade. The water is sprayed out in specially designed nozzles located along the leading edge of the jet plow's blade. The submarine cable will feed from the barge, pass through the back of the blade, and into the liquefied sediments. The majority of the sediment will settle into the trench leaving the cable installed at the desired depth.

The jet plow will reach within approximately 600 feet of the east shore. The cable will be pulled ashore and fed into the vault. This process will be repeated until all three submarine cables are laid. The last step will be burial of the cable sections between the jet plow and cable trenches using diver burial and nearshore excavation. The intertidal sections of the diver burial zones will be enclosed within silt curtains.

Blasting

Blasting may be necessary to achieve the engineered specifications associated with all aspects of the Project, especially where shallow bedrock is present.

Blasting contractors will be required to adhere to all conditions specified in the Certificate of Site and Facility, to be applied to and issued by the NH Site Evaluation Committee ("SEC"), and will also be required to observe local (municipal) blasting-related ordinances. BMPs to protect water quality before and during blasting activities are outlined in the NHDES technical publication WD 10-12 *Rock Blasting and Water Quality Measures That Can Be Taken to Protect Water Quality and Mitigate Impacts*.

In some cases, controlled blasting to remove rock will be less impactful to nearby landowners than "hoe-ramming" because the blasting will occur over a shorter duration. Blasting will be performed in compliance with the State and Local Fire Marshal regulations. Pre-blast surveys will conducted at nearby properties.

All blasting will be performed by licensed blasting contractor(s), pursuant to the regulations of State and Local Fire Marshals. In addition, blasting near PSNH's existing transmission and distribution lines will be performed in accordance with PSNH minimum specifications.

Temporary Erosion and Sedimentation Controls and Stormwater Management

The installation of temporary erosion and sedimentation controls is an important aspect of project construction, and will coincide with the initiation of nearly every form of construction. All work performed by SRP contractors in New Hampshire will follow the New Hampshire Department of Environmental Service (NHDES) *Best Management Practices Manual For Utility Maintenance In And Adjacent To Wetlands And Waterbodies In New Hampshire* which is published by the New Hampshire Department of Resources and Economic Development (NHDRED)[8]. Additionally, PSNH requires that all employees and contractors are trained on wetland Best Management Practices that must be followed during construction activities[9].

SRP contractors are required to follow all appropriate procedures specified by state law and all permit conditions when they are issued for the project. Land clearing (forestry) contractors are should to comply with New Hampshire Department of Resources and Economic Development (DRED), Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire[10]. Blasting contractors will be required to adhere to the conditions specified in the Certificate of Site and Facility to be issued by the NH Site Evaluation Committee (SEC) and will also observe local municipal ordinances. NHDES has produced technical publication WD-10-12 Rock Blasting and Water Quality Measures That Can Be Taken to Protect Water Quality and Mitigate Impacts which outlines best management practices to protect water quality before and during blasting activities[11].

With respect to managing stormwater to protect sensitive wetlands and habitats during site preparation activities, SRP's contractors are required to follow the best management practices (BMPs) detailed in the *NH Stormwater Manual* (NHDES, 2008)[12] and adhere to the conditions specified in the Certificate of Site and Facility to be issued by the NH SEC.

Temporary erosion and sedimentation controls will also be installed and maintained in accordance with the New Hampshire Department of Transportation (NHDOT) Guidelines for Temporary Erosion and Sediment Control and Stormwater Management (NHDOT 2002) along underground portions of the project.

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[8] http://www.nhdfl.org/library/pdf/Publications/DESUtilityBMPrev3.pdf

[9] http://www.transmission-nu.com/contractors/pdf/Contractor_Online_Training.pdf

[10] http://www.nhdfl.org/library/pdf/Publications/BMPs%20erosion%20control%202004.pdf

[11] http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf

[12] http://des.nh.gov/organization/divisions/water/stormwater/manual.htm

Contractor(s) will perform daily inspections to monitor controls, devices and features. Daily inspections will document the condition of Best Management Plans (BMPs) and will ensure BMPs are installed, functioning, and being maintained. All BMPs will be installed following vegetation removal and prior to ground disturbance, and will be maintained through final site restoration. All BMPs will be installed under the guidance of an environmental inspector, and will adhere to the standards described in the Federal, NHDES, NHDOT and local guidelines.

An issue that may require special attention is the potential presence of "emerging contaminants" in the vicinity of the former Pease Air Force Base (Pease). Pease is currently conducting sampling in groundwater and surface waters on and surrounding the base for perfluorinated compounds, considered emerging contaminants by the US Environmental Protection Agency (USEPA). The levels of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) have been stable and are well below USEPA's Provisional Health Advisory levels for many on-base wells, but have been elevated in some locations on and adjacent to the base. Results from a large-scale sampling effort in the fall of 2015 have not been released to the public, but preliminary samples indicate a spring near Pickering Brook in Newington has elevated PFOS levels. The project will continue to coordinate with Pease to determine if the groundwater in the vicinity of the proposed route requires special handling during underground and foundation construction. Should special handling be required, the Project will consult with NHDES and USEPA to select the correct treatment method.

Vegetation Removal, Including Tree Clearing

Clearing the SRP corridor of shrubs and trees provides for an environment that safely and reliably supports the construction and ongoing operation of the transmission lines. No herbicides will be used for clearing during construction. To meet electric industry vegetation clearance standards, targetspecies of trees must be permanently removed. These are trees that could become tall enough to grow or fall into the high-voltage transmission lines.

Land clearing (forestry) contractors should comply with New Hampshire Department of Resources and Economic Development (DRED), *Best Management Practices for Erosion Control on Timber Harvesting Operations in New Hampshire.* [13]

Vegetation Clearing Methods

Vegetation clearing crews must be able to access areas where vegetation removal is required for construction and within the clearance zones of the new 115-kV overhead lines, as well as to reach danger and hazard trees within or adjacent to the project corridor. In order to reach areas where vegetation clearing is necessary, clearing crews will use temporary access roads (refer to Sections 4.3.1 and 4.3.2).

[13] http://www.nhdfl.org/library/pdf/Publications/BMPs%20erosion%20control%202004.pdf

During the vegetation clearing process, SRP will implement measures to minimize the environmental effects of vegetation removal. The following low-impact clearing measures may be used to minimize environmental impacts:

- Consider soil and weather conditions when conducting vegetation removal activities (e.g. remove vegetation during frozen ground conditions if practical);
- Maximize use of uplands for clearing access routes and stockpiling cut timber and brush;
- Fell trees directionally (parallel to and within the ROW) to minimize impacts to off-ROW and residual vegetation, where practical;
- Adhere to project specific BMPs;
- Cut trees close to the ground, while leaving root systems and stumps, where practicable, to retain soil stability;
- And, adhere to project-specific clearing schedules designed to protect wildlife species during critical life stages, such as breeding, where applicable.

No temporary cleared areas will be stumped or grubbed.

Danger Trees

Danger trees will also be identified and cut down during vegetation removal and tree clearing stage of construction. "Danger trees" are dead, damaged, or dying trees located adjacent to the ROW itself that, due to their condition, pose an increased risk of contact with the transmission line. Some danger trees may be within or adjacent to protected natural resources. Danger trees located outside the limits of the Project clearing may also be identified and removed. Landowners will be informed prior to the removal of any off-corridor danger trees.

Wood Management

Woody material will be either chipped or diced and windrowed in uplands or removed from the ROW. Chips generated from the tree clearing may be utilized for erosion control purposes. At the discretion of the environmental monitor, some woody material may be left in wetlands to avoid physical impacts to the wetland that would result from removing the wood. Where possible, for landowners who request to retain timber or firewood that is cleared during the construction process, the timber/firewood will be placed on the landowner's property in upland areas in locations that do not interfere with the project.

Access Roads

Access to the project corridor will be achieved through upgrading or developing new temporary access roads. Where gravel roads or ATV trails are already present, the access roads will follow them; however, developing new roads or placing timber mats on existing roads will be required on those sections that have no trails or roads. Timber mats may be used in or around wetlands, and mapped archaeological and rare species sites to protect these sensitive areas. Erosion controls such as silt socks, bark mulch berms, hay bales, silt fencing and other environmental controls are also used to stabilize the soil and protect wetlands and streams

during construction. With the consent of property owners, gates will be placed across new access roads where the access roads intersect town or state roads. Gates provide added security and limit unauthorized access to rights-of-way. By landowner request, gates will also be installed where access roads cross agricultural land containing livestock.

On-Corridor Access Roads

On-corridor access roads will be constructed by mowing vegetation and placing timber mats in environmentally sensitive areas. By using these construction techniques, permanent impacts to wetland and waterbody and other sensitive resources will be avoided. The on-corridor access roads will be approximately 16 feet wide to accommodate the necessary construction vehicles and materials. All impacts to wetland resources will be temporary, and wetland grades will be restored and soils stabilized when the timber mats are removed.

Off-Corridor Access Roads

Limited off-corridor access roads will be needed to access the Project corridor, and any impacts associated with these areas have been quantified. Similar to on-corridor access roads, these areas will be minimally improved as needed to meet the access requirements and all impacts will be temporary in nature.

Temporary Storage and Staging Areas

Construction of the proposed Project will require temporary storage and staging areas, generally located in the vicinity of the ROW. Storage and staging areas will be located on property owned by PSNH, when feasible, or leased. The areas will be identified in the construction management plan and will go through all necessary approvals prior to establishment and use, but in all cases, previously disturbed upland areas, such as large parking lots or storage sites, will be given priority. In general, temporary storage areas will require approximately two to five acres of land and will primarily be used to store equipment and construction materials, provide parking for construction crews, and provide meeting locations and equipment maintenance areas. Temporary storage areas are typically used for a period of time when construction is occurring in the vicinity, and will often be moved as construction progresses. Following construction, the areas will be restored to pre-construction conditions. Staging areas are generally smaller than storage areas (less than two acres) and are most often used for stockpiling construction materials (e.g. erosion control materials). As with storage areas, staging areas are relocated throughout the construction process.

Work Pads

Work pads, or crane pads, are temporary areas around each new structure which are approximately 5,000 to 14,000 square feet in size, depending on the type of structure and installation method. These areas are used to stage structure components for final on-site assembly and to provide a safe, level work base for the construction equipment used to erect transmission structures. Some temporary grading may be necessary to accommodate the work; however these areas will be restored following construction.

Pull-pads serve as level staging areas for installing pull ropes and conductors, and will typically be approximately 300 feet in length, and of variable width depending on site constraints and construction needs. Pulling angles, the length of the conductor on the reels, the type of equipment required, topography, and access restrictions determine the specific locations and sizes of the pull-pads. These sites must be level to support the weight of the equipment, and pull-pad sites often require some amount of grading. Where soils are saturated or soft, construction mats will be used for stability. Should extreme conditions be encountered, on-site consultation will be performed with the third party inspector prior to locating any portion of a pulling or tension set-up in or near a protected natural resource.

Clean-Up and Restoration

All areas disturbed during construction activities will be restored as closely as possible to pre-construction conditions. Contours and drainages will be restored. Disturbed wetland soils will be mulched with straw for final restoration in accordance with the New Hampshire Department of Environmental Service (NHDES) *Best Management Practices Manual For Utility Maintenance In And Adjacent To Wetlands And Waterbodies In New Hampshire*. Upland areas not adjacent to wetlands and streams will be seeded with a suitable seed mix and mulched with hay. Seeding may not be necessary in some areas as upland and wetland vegetation typically re-establishes quickly. Seeding may be omitted from specific sensitive areas at the direction of the NHNHB where recovery of native vegetation or listed species is the priority. In addition, specific revegetation plans may be developed in response to landowner requests, as long as the plan is equally protective of natural resources. In no cases will invasive species be included in any seed mixes.

Construction debris (litter, hardware, bracing) will be removed from the ROW and disposed of at a licensed recycling or solid waste disposal facility. Erosion and sedimentation controls will be installed as needed and maintained through the duration of the restoration efforts. Temporary erosion control devices will be removed once the area has been stabilized.

PSNH personnel and/or qualified representative(s) will walk through the completed program and check for any potential erosion problems or areas that require further restoration to pre-existing conditions. Any problem areas will be reported and permanently stabilized.

Potential Project Impacts and Avoidance and Minimization Measures

A discussion of Project alternatives, avoidance and minimization and proposed impacts to water resources is included below. Additional details are available in the Natural Resource Impact Assessment (Appendix B), Rare, Threatened, and Endangered Species and Exemplary Natural Community Report (Appendix C), the Biological Assessment for the Northern Long-eared Bat for the Seacoast Reliability Project (Appendix D) and the report entitled *Modeling Sediment Dispersion from Cable Burial for Seacoast Reliability Project, Little Bay, New Hampshire* (Appendix E). Water resources and proposed impacts along with buffer areas and other information is also included on the detailed plans included in Section 16, below.

Alternative Analysis

Preferred Location

The preferred location of the SRP was chosen after PSNH conducted a thorough analysis of potential alternatives. The proposed project will be sited within an existing utility corridor that contains one or more existing 34.5 kV electric distribution lines or transmission lines, has existed for decades, and is the least impactful (of the three route alternatives) between the existing Madbury and Portsmouth substations.

The preferred location of the project was chosen based on an analysis of the chosen route and all other alternatives that PSNH considered. The preferred route is the most economical, the most protective of environmental and historical resources, and the most technically complete option. The selected route represents the most efficient and least cost alternative that will solve the local electrical reliability problems identified by the *New Hampshire/Vermont 2011 Needs Assessment Report* because it is located almost entirely within an existing utility corridor, requires fewer land acquisitions than the other alternatives, does not have significant utility corridor constraints, would result in fewer impacts to wetlands and other environmental resources, will result in fewer impacts to historical resources, has fewer permitting risks and associated schedule delays, and can be built within the desired timeframe identified by ISO-New England.

Site Selection Process

As part of its route selection process, PSNH analyzed alternative routes within the area between the Madbury and Portsmouth substations. The study area included the Lee, New Hampshire area to the west, Dover, New Hampshire and Eliot, Maine area to the north, New Castle, New Hampshire and Kittery, Maine area to the east, and Stratham, New Hampshire area to the south. Route locations beyond these general limits were not evaluated because any resulting route options would have been significantly longer, resulted in greater impacts and higher costs, and did not provide the necessary electrical solutions that the project was designed to meet.

Route Options Considered and Rejected

Early in the process, routes along the Spaulding Turnpike and Route 4 were investigated; however, the potential route options associated with the use of the Route 4 and Spaulding Turnpike corridors were eliminated from further consideration following discussions with the New Hampshire Department of Transportation (NHDOT). Specifically, the NHDOT indicated that co-locating transmission lines within the corridors of these two state roads would only be possible and allowable if there were no other options available and that extreme hardship could be proven. Also, NHDOT maps indicated that there would be space constraints for co-locating a transmission line and construction presented safety challenges associated with traffic density. In addition, PSNH would need to obtain rights from the NHDOT, as there are currently no rights in either the Route 4 or Spaulding Turnpike corridors to site and construct a 115-kV transmission line, regardless of its configuration (i.e., overhead or underground). As there are other potential viable route options available that would meet the Project schedule and be

consistent with the evaluation criteria for route selection, these State-corridor options are currently eliminated from further consideration.

Alternate Routes Evaluated

PSNH determined that there were three logical route alternatives, which were divided into geographic groupings: the Northern Route Alternative, the Middle Route Alternative, and the Southern Route Alternative. See Appendix 23 in the SEC application for a map of the routes.

The Northern Route Alternative

The Northern Route Alternative would have utilized existing transmission corridors that travel east from Madbury, New Hampshire into Eliot, Maine, turn to head southeast to Kittery, Maine and then return into Portsmouth, New Hampshire. The Northern Route Alternative was rejected because it presented significant constructability, permitting, land rights, and cost issues. Primarily, the 12.5 mile long Northern Route was rejected because 11.5 miles of the existing 115 kV and 345 kV transmission lines within the existing corridor would need to be relocated and rebuilt to accommodate the new line; the construction of the new line and relocation of existing transmission lines would have necessarily required the construction of approximately 24 miles of transmission lines. The relocation and rebuild for a significant portion of the new line would increase cost, add one or more years to the overall project schedule, and could potentially jeopardize the stability of the electric system in the region during construction because the existing transmission lines would have been removed from service for extended periods of time.

If PSNH chose the Northern Route Alternative, 11.8 miles/acres of additional (ROW)would be needed. To secure these rights, PSNH would have to engage in landowner discussions along significant portions of the route in both the State of New Hampshire and State of Maine to purchase the necessary rights. Such efforts which would increase costs and extend the project timeframe. In particular, the existing corridor in and around Kittery, Maine presented severe constraints for the construction and operation of an additional 115 kV transmission line. This route also had two significant water crossings over the Piscataqua River, which would add to the complexity and cost of this route.

In addition, the Northern Route Alternative presented significant risks associated with State permitting and siting requirements in two states, which would expand the time table for project completion. Indeed, both Maine and New Hampshire would have permitting and siting authority, which would increase the complexity of the process. For these reasons, the Northern Route was rejected.

The Southern Route Alternative

The Southern Route Alternative would have traveled south from Madbury until it reached Stratham, New Hampshire where the line would head east into Greenland, New Hampshire, and eventually turn north into Portsmouth. The Southern Route would have utilized the existing railroad corridor and the existing PSNH utility corridor from Madbury through Durham—the same corridors that will be used by the preferred route. The Southern Route was

rejected because it would likely create more voltage and reliability issues than it would solve. The Southern Route Alternative was almost twice the length of the Northern Route and the Middle Route, approximately seven (7) miles longer, which would result in greater "line-loss" and inefficiency. Also, if the line was routed farther to the south of the Project area, the new 115 kV transmission line would be further from the end point connections of the Madbury Substation and the Portsmouth Substation. As the length of the line increases, the cost of the project increases significantly. Further, this route would require construction of an additional capacitor bank at the Rochester or Madbury substation, which would not be required for the other routes. The additional capacitor bank would also increase costs.

The Southern Route also presented other technical issues associated with constructing the project through the Portsmouth traffic circle, the need to secure additional land rights to construct the project, and greater environmental impacts to wetlands and State-designated prime wetlands in the southern sections of the State. For these reasons, the Southern Route Alternative was not selected as the preferred route.

The Middle Route Alternative

The Middle Alternative was eventually chosen as the preferred route because it maximizes the use of the existing linear corridor that already contains existing electric utility lines for the entire route, including an existing submarine cable corridor through Little Bay.

The preferred route also requires the least amount of additional land rights, minimizes impacts to environmental and historical resources, maximizes the electrical reliability of the regional electrical system while addressing the needs in a cost-effective manner, and will ensure that a project is designed and constructed to meet ISO-NE's project requirements.

The proposed route was determined to be the most cost-effective project that would successfully meet the needs identified in the *New Hampshire/Vermont 2011 Needs Assessment Report*. The preferred route was identified, in part, to reduce the total costs borne by the ratepayers in the State of New Hampshire and the New England region in accordance with Good Utility Practice. By choosing the most cost-effective route, the cost of the project borne by the ratepayers in the State is minimized while at the same time a higher level of transmission reliability is provided.

Impact Avoidance

Within the proposed route, permanent and temporary impacts to water resources were avoided where possible throughout the design and engineering phases of project development. Multiple rounds of preliminary design reviews were conducted between project engineering and environmental specialists. New structures were located outside of wetlands, unless technical constraints pertaining to project corridor limitations, structure height and maximum spans dictated that a structure be placed in a wetland resource. In the final design, 27 new structures, of the 180 proposed new or relocated will be located within or partially within wetland areas and will result in permanent impacts.

Access routes and temporary work pads for construction were similarly reviewed and wetland crossings were avoided where possible. The required tree clearing along the edges of the existing corridor limited the amount of wetland avoidance; however other methods such as clearing during winter/frozen-ground conditions and hand cutting may be employed to minimize temporary impacts associated with these activities (see below).

Impact Minimization

Engineering constraints limited the ability to avoid placing 27 new structures within or partially within wetland areas, thus wetlands have been avoided by approximately 85 percent of the 180 proposed new or relocated structures. Additionally, it should be noted that approximately 51 existing distribution structures will be removed from wetland areas by utilizing double circuit designs where necessary. The existing distribution line will be co-located on the same new structures below the new transmission lines. This will result in the net decrease of 24 structures within wetland areas.

The spatial extent of temporary impacts is significant; however several steps will be taken to minimize their effect on protected areas, including wetlands. For the terrestrial portions of the Project, temporary impacts will be associated with construction access, access for corridor tree removal, access for the removal of existing structures, and construction work pads around new structures. Timber mats (approximately 16 feet long by 4 feet wide) will be utilized where necessary depending on the ground conditions during construction activities. Work will be performed where possible during frozen or dry conditions and using low-ground pressure vehicles as practicable. To the extent feasible, access paths already present in the corridor will be utilized to avoid creating new routes and minimize wetland crossings. Additionally, mats will be placed on shrubs to help prevent mat timbers from sinking into wetland soils. Previous similar projects have found that the shrubs survive the short-term matting. Streams will be spanned with timber mats from bank to bank, with no permanent impacts anticipated.

Potential impacts to water quality related to the construction of the SRP were also considered during project planning and design. Erosion control measures including adherence to the *Best Management Practices Manual for Utility Maintenance in and Adjacent to Wetlands and Waterbodies in New Hampshire* and applicable internal Best Management Practices (BMP) associated with erosion control and clearing during transmission line construction will be strictly enforced. The NH BMPmanual includes 14 different BMPs that are detailed in Appendix A of the document. BMP #1 through #13 are applicable to the access roads and work pad areas associated with the SRP, and should be utilized where needed.

In addition, the project alignment and all proposed work areas were reviewed to identify potentially high-risk sites for erosion and other soil disturbances associated with construction activities where enhanced BMPs may be needed in addition to those referenced in the applicable BMPs. These areas included steep upland slopes (generally >10 percent) that are located in close proximity to wetland and riparian resources where access roads or work pads are proposed. Minimal grading and gravel may be required in these locations to safely accommodate the required construction equipment. In addition to the standard BMPs, water

bars should be installed on access roads that are located on steep (>10% slope) slopes and greater than 100 feet in length, with level spreaders located at the downslope end to disperse flow. If roadside ditches are required, stone check dams should be installed to limit the velocity of any stormwater prior to dispersal into adjacent upland areas.

The identified high-risk sites are listed below, and identified on the Project's Environmental Mapping:

1. Proposed Structure #6 (Madbury): Steep slopes associated with Madbury Road up-gradient of Wetland MW1
2. Proposed Structures #13/14 (Durham): Steep slope north of Wetland DW91 and Stream DS92
3. Proposed Structures #28-#30 (Durham): Steep slopes to the north and south of the Oyster River (DS53) including small tributary streams (DS51, DS61, DS61A and DS61B) and multiple wetland areas (DW49, DW55, DW59, DW63)
4. Proposed Structure #47 (Durham): access road on steep slopes up-gradient of Wetland DW56
5. Proposed Structure #58 (Durham): access road and work pad on steep slopes up-gradient of Wetland DW31
6. Proposed Structures #66-#67 (Durham): access roads on steep slopes located immediately to the east and west of Wetland DW9
7. Proposed Structures #80-#81 (Durham): access road traverses steep side-slope up-gradient of Wetland DW42
8. Proposed Structures #82-#83 (Durham): steep access road immediately east of Structure #82 and up-gradient of Wetland DW38

Normandeau environmental monitors and PSNH construction monitors will be on site during construction to insure that the construction contractors follow the approved access plans and construction Best Management Practices (BMP).

Construction of the submarine portion of the project within Little Bay will also involve temporary disturbances to the subtidal and intertidal estuarine areas during the jetplowing process. No wetland impacts will occur as a part of the underground sections landward of either side of the bay as the new line will be installed within upland and existing road beds. Several submarine cable burial construction technologies were investigated to determine if they would be feasible and cost effective. This included horizontal directional drilling (HDD) and the chosen jetplow technique. HDD was determined to be impractical, due to the length of the crossing, the presence of bedrock under Little Bay, the large staging area needed for the terrestrial components and a risk of "frack-out" during the drilling process.

Normandeau and PSNH representatives will be on site during construction to ensure that the Contractors follow the approved Access Plans and construction BMPs.

Impact Analysis

Unavoidable direct and secondary impacts to water resources and associated upland buffer areas were reviewed throughout the Project area. Direct impacts include permanent and temporary disturbances, as discussed above (See Table 1). Secondary impacts were also reviewed, including forested wetland conversion and upland clearing within perennial and intermittent stream buffers. Forested wetland conversion will occur where forested wetland areas within the SRP corridor are cleared to allow for the safe construction and operation of the proposed transmission line. Temporary direct impacts from timber matting to allow for mechanized clearing and construction of the transmission line will be necessary in these areas. These areas will not be stumped or grubbed and soil disturbance will be minimal. The forested wetlands will naturally convert to emergent or scrub-shrub resources following the clearing activities. Upland stream buffer tree removal within 100 feet of perennial streams, 50 feet of intermittent streams, and 25 feet of ephemeral streams was also quantified.

Expected Impact Types

Direct Permanent Impacts

Direct permanent impacts will result from the placement of new and relocated structures, their associated foundations, and caissons; and other permanent fill consisting of concrete mattresses in jurisdictional resource areas within Little Bay.

Direct Temporary Impacts

Direct temporary impacts will result from the placement of temporary construction mats, or timber mats for access and construction activities, temporary mat bridges and culverts for stream crossings, and temporary work pads for installing the structures. Direct temporary impacts will also result where the underground portions of the line are installed in trenches through jurisdictional natural resources. Conducting work during frozen or dry conditions will also help to minimize disturbances to wetlands and streams. Where winter construction is not possible, access across wetlands and streams will employ timber mats or other approved BMPs. All access roads across wetlands and streams will be temporary and designed to minimize impacts and surface water disturbance.

Secondary Impacts

Based on pre-application meetings with the federal regulatory agencies, secondary wetland and stream impacts for the Project will include the conversion of forested wetlands to scrub-shrub or emergent wetlands through tree clearing and clearing of upland forest within 100 feet of perennial streams, 50 feet of intermittent streams, 25 feet of ephemeral streams.

For calculating the amount of secondary impacts that must be compensated for in the mitigation package, the following guidance was provided by the federal agencies:

- 15% of forested wetland conversion in existing ROW
- 15% of upland stream buffers in existing ROW

Table 1. Summary of total proposed direct permanent and temporary wetland impacts by town.

Town	Permanent (SF)	Temporary (SF)	Total (SF)
Madbury	199	29,261	29,460
Durham	3,764	325,627	329,391
Newington	2,165	221,520	223,685
Portsmouth	0	851	851
Total (Sq. Ft.):	6,128	577,259	583,387
Total (Acres):	0.14	13.25	13.39

The resulting quantities for secondary impacts are added to the direct permanent impacts, and this represents the wetland impacts that must be compensated for at the specified federal mitigation ratios.

Direct Wetland Impact

Direct permanent and temporary wetland impacts associated with the SRP total 6,128 SF (0.14 acres) and 577,259 SF (13.25 acres), respectively. The breakdown of impacts by town and Cowardin cover class associated with the SRP is summarized in Table 2. The SRP will impact greater than 20,000 square feet of non-tidal wetland and intersects with potential habitat for wetland-dependent threatened and endangered species. It is therefore classified as a Major project in accordance with Env-Wt 303.02(c) and Env-Wt 303.02(h).

A detailed summary table of wetland impacts, wetland classification and functions/values is attached along with additional information from the Natural Resources Existing Conditions Report (Appendix A). The following is an overview of the wetlands proposed to be impacted during the project.

Table 2. Proposed wetland impacts by cover class and town

Cover Type	# Wetlands	Permanent Impact (SF)	Temporary Impact (SF)	Total (SF)
Madbury				
PEM/PSS	1	199	28,940	29,139
PSS	1	0	321	321
Sub-Total:	*2*	*199*	*29,261*	*29,460*
Durham				
E1UB (Subtidal)	1	0	49,832	49,832
E2US (Mud Flat)	1	3,550	114,166	117,716
E2EM (Salt Marsh)	1	0	624	624
E2RS (Rocky Shore)	1	0	279	279

Cover Type	# Wetlands	Permanent Impact (SF)	Temporary Impact (SF)	Total (SF)
PEM (Emergent/Marsh)	5	71	31,185	31,256
PEM/PSS	23	60	72,663	72,723
PEM/PSS/PFO	1	0	807	807
PEM/PSS/PUB	1	20	18,285	18,305
PEM (Wet Meadow)	8	20	5,779	5,799
PFO	3	23	4,517	4,540
PSS	11	20	18,120	18,140
PSS/PFO	4	0	9,370	9,370
Sub-Total:	*60*	*3,764*	*325,627*	*329,391*
Newington				
E1UB (Subtidal)	1	0	77,565	77,565
E2US (Mud Flat)	1	1,484	29,925	31,409
E2EM (Salt Marsh)	1	0	598	598
E2RS (Rocky Shore)	1	302	217	519
PEM (Emergent/Marsh)	2	134	16,500	16,634
PEM/PSS	8	173	54,020	54,193
PEM/PSS/PFO	3	0	3,722	3,722
PEM/PUB	2	0	976	976
PEM (Wet Meadow)	5	41	13,829	13,870
PSS	3	20	8,854	8,874
PSS/PFO	2	0	4,131	4,131
PSS/PUB	1	11	10,063	10,074
PUB	1	0	1,120	1,120
Sub-Total:	*31*	*2,165*	*221,520*	*223,685*
Portsmouth				
PEM/PSS/PFO	1	0	648	648
PEM (Wet Meadow)	1	0	203	203
Sub-Total:	*2*	*0*	*851*	*851*
Total:	**SF**	**6,128**	**577,259**	**583,387**
	Acres	**0.14**	**13.25**	**13.39**

Madbury

Two wetlands (MW1/MW2) will be impacted in Madbury, totaling 199 SF (0.005 acres) of permanent and 29,261 SF (0.672 acres) of temporary disturbance. Permanent impacts are associated with new structures and temporary impacts are associated with access roads, work pads and areas needed for "pulling" the new conductors. These wetlands are located near the

existing PSNH Madbury Substation and numerous transmission lines and also parallel a railroad corridor. Wetland MW1 is predominantly a PSS wetland and MW2 is a combination of PEM and PSS cover types.

Durham

Sixty (60) wetlands will be impacted in Durham, totaling 3,764 SF (0.09 acres) of permanent and 325,627 SF (7.48 acres) of temporary impacts. Permanent impacts are associated with new structures and concrete mattresses and temporary impacts are associated with access roads for construction and tree clearing, work pads and work areas needed for "pulling" the new conductors. Temporary impacts are also associated with the intertidal and subtidal areas of Little Bay which will be crossed via submarine cable. The new transmission line will be installed via trench and jetplow depending on the location and substrate. These areas will be returned to the original grade following construction and restored where applicable.

The majority (80%) of the permanently impacted terrestrial wetlands are PEM/PSS wetlands, wet meadow wetlands (PEM), or scrub-shrub (PSS) wetlands. The remaining wetlands are other combinations of cover types including small area of forested and unconsolidated bottom features. The permanent impacts to estuarine wetlands are limited to the potential need to place concrete mattresses for cable protection in areas of intertidal mudflats (E2US) and a small amount of intertidal rocky shore (E2RS). Subtidal unconsolidated bottom (E1UB) wetland in Little Bay will also be temporarily impacted during the installation of the submarine cable along with small areas of intertidal wetlands, including salt marsh (E2EM), intertidal rocky shore (E2RS) and areas of intertidal mudflats (E2US).

Newington

Thirty-one (31) wetlands will be impacted in Newington, totaling 2,165 SF (0.05 acres) of permanent and 221,520 SF (5.08 acres) of temporary impacts. Permanent impacts are associated with new structures on land and concrete mattresses in Little Bay. Temporary impacts are associated with access roads for construction and tree clearing, work pads and areas needed for "pulling" the new conductors. Temporary impacts are also associated with the intertidal and subtidal areas of Little Bay which will be crossed via submarine cable (see description, above).

As with Durham, the majority (98%) of the permanently impacted terrestrial wetlands are PEM/PSS wetlands, wet meadow wetlands (PEM), or scrub-shrub (PSS) wetlands and the remaining wetlands are combinations of cover types including wetlands with small areas of forested cover along the edges of the ROW. Subtidal unconsolidated bottom (E1UB) wetlands in Little Bay will also be temporarily impacted during the installation of the submarine cable. Additionally, small areas intertidal rocky shore (E2RS) and mudflats (E2US) will also be permanently and temporarily impacted.

Portsmouth

Two wetlands will be impacted in Portsmouth, totaling 851 SF (0.02 acres) of temporary impacts. Permanent impacts have been avoided and temporary impacts are associated with

access roads for construction and tree clearing, work pads and areas needed for "pulling" the new conductors.

Wetland PW5 is a PEM/PSS wetland that is mostly wet meadow and PW2 has a small component of forested wetland PFO outside of the PEM/PSS wetland covertype found in the cleared ROW area.

Estuarine Effects

The three transmission cables will be installed across Little Bay within an area mapped as "Cable Area" on NOAA Chart 13825. The primary installation will involve creation of a temporary trench for each cable using a jet plow (Figure 2). This process essentially opens a narrow trench, lays the cable, and buries the cable in one step. The jet plow functions by injecting pressurized water into the sediment to fluidize it, allowing the cable to settle below the bay floor to the required depth (3.5-foot burial on the tidal flats; 8-foot burial in the channel). The support barge and jet plow will not be able to reach the shoreline on either side, however. In these nearshore areas, the cable will be laid on the substrate surface and divers will use hand jets to lower the cable to the desired 3.5-foot burial depth (a total distance of approximately 880 ft [268 m] per cable). Silt curtains will be placed surrounding the intertidal areas to be hand jetted or trenched to contain suspended sediments.

Within the tidal zone where jet plowing is possible, each cable will require a rectangular trench about 1-foot wide and about 4,266 feet (1,300 m) long for a total direct surface disturbance of 4,266 sq. ft. (0.1 acre) per crossing or a total of 12,798 sq. ft. (0.3 acres) for all three cables. The jet plow installation will begin on the western tidal flat approximately 300 ft (95 m) seaward of the shoreline and continue until approximately 580 ft (178 m) west of the eastern landfall. For the majority of the length, the cables will be laid 30-feet apart on center, although as they near the shorelines they funnel together to rejoin. The wide separation is necessary to protect the cables because the physical constraints of the crossing will require a multipoint anchoring system on the installation barge.

Both the jet plowing and diver hand jetting will require the support of a barge. On the shallow tidal flats, the barge will be grounded for a period of time for each installation phase.

Additional underwater construction activity will include removal of sections of existing cables and other minor debris that could present obstacles to the jet plow. Four PSNH transmission cables from an earlier crossing currently lie on or within 24 inches of the sediment surface within the Cable Area. The cables are between 60 and 110 years old, and are largely intact on the seafloor. PSNH attempted to remove the cables in the mid-1990's (NHDES Wetlands Board Permit 95-02299; US Army Corps of Engineers Permit 1996-00160), but the effort was halted after the cables fractured during the removal attempt. An inspection by divers in 2014 indicated that the cables were sufficiently intact to be successfully "grappled" to the surface. Most of one cable and approximately half of a second cable lie within the jet plow route. The planned approach is to sever the old cables and cap the ends at the minimum length necessary to clear the jet plow route. The severed cable sections will be lifted to a barge for on-land disposal.

The jetplow operation is expected to extend over a period of three to four weeks, including all equipment mobilization. Each cable will require about five to seven days in total, during which the jet plow installation process will generally take place over one day. Divers using hand held jets will complete the cable burial from the end of the jet plow to each landfall. This process will take up to 90 days. Cable laying is planned for the fall (after Labor Day) and will be completed before air temperatures remain below 32˚F, a point at which the cables would not be flexible enough to handle off the spool.

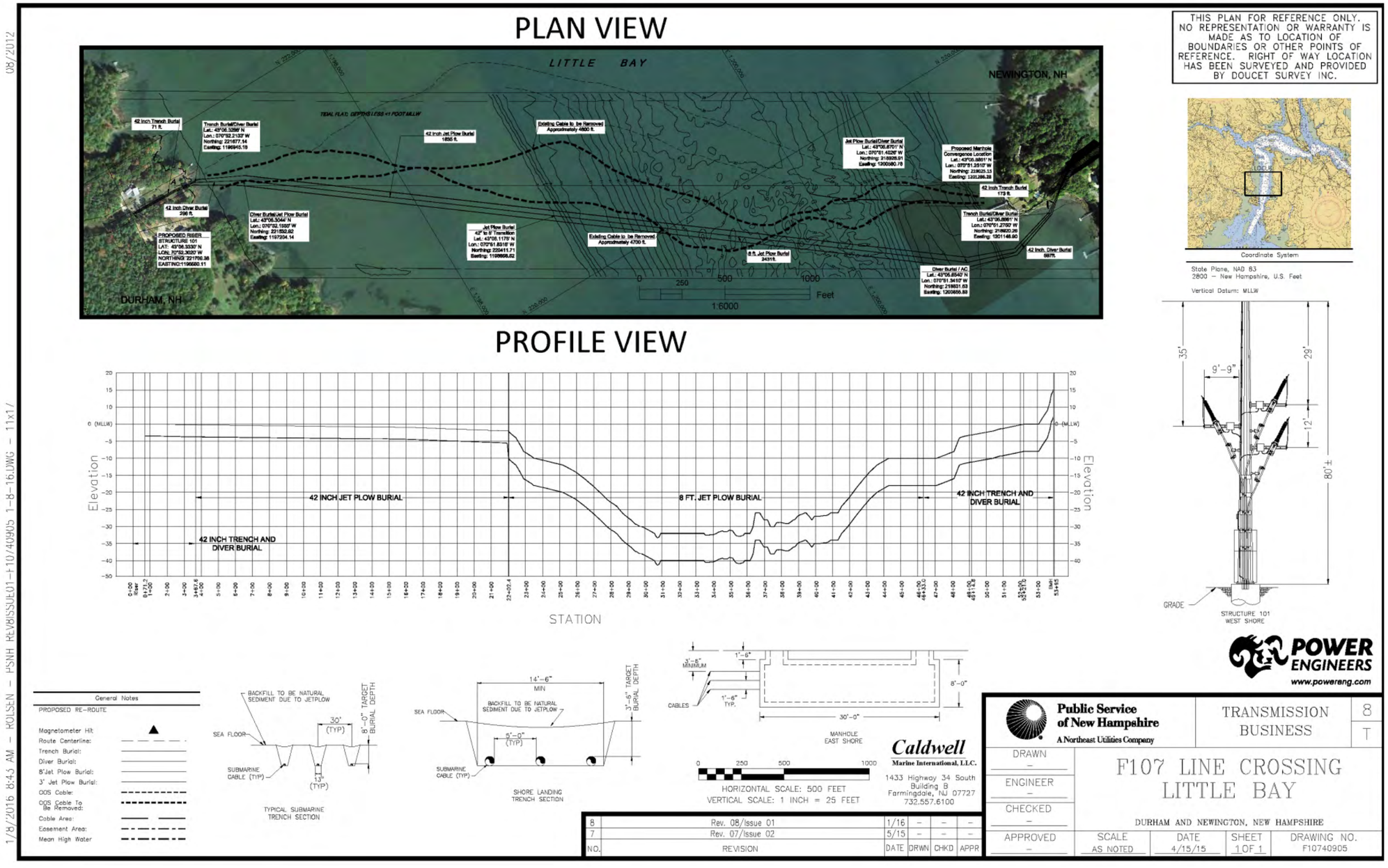

Figure 2. Little Bay cable crossing detail for Seacoast Reliability Project (SRP)

Potential temporary impacts along the Little Bay crossing include:

- Direct disturbance of the sediment surface from cable installation along each cable trench (quantifiable) and from anchoring of the installation vessel (not quantifiable)
- Deposition of sediments suspended during the jet plowing and dispersed beyond the footprint of each trench (quantifiable)
- Increase in suspended sediments above ambient conditions during jet plowing
- Entrainment of planktonic organisms in the jet plow water intake

Potential long-term impacts as a result of the operating cables include:

- Exposure of organisms to electromagnetic fields emitted from the three cables
- Exposure of organisms to heat emanating from the cables

Direct Stream Impacts

Direct permanent impacts to streams have been avoided, with all structures located in upland or wetland areas. Direct temporary impacts to streams total 211 square feet (104 linear feet) (see Table 3). The majority of streams will be crossed using temporary mat bridges, with matting placed parallel to, but outside of each bank, to serve as bridge supports, and other matting placed perpendicularly on top of these to bridge the stream. Erosion controls such as bark mulch or silt socks will be placed adjacent to the timber mats serving as bridge supports to minimize soil disturbance and prevent sediment from entering the stream. Two streams are located within work pad areas, and may need temporary culverts during construction activities. Temporary culverts will be sized based on appropriate guidelines to accommodate flows. These areas will be inspected and maintained throughout construction by an Environmental Monitor and the temporary culverts will be removed when no longer needed.

Additionally, one perennial stream in Durham, College Brook (DS74), is proposed to be crossed with an open trench associated with underground line construction. A short section of this stream will be temporarily relocated using coffer dams to divert water around the impact area during construction. The underground electrical conduit will be installed and the impacted portion of the channel will be reconstructed with native material and stream flow will be restored to its original channel. The area will be stabilized as needed to support the disturbed banks.

Table 3. Proposed stream impacts by town and flow regime with proposed crossing type

Stream ID	Stream Type	Name	Temp. Impact (SF)	Temp. Impact (LF)	Crossing Type
Durham					
DS8	Ephemeral		0	0	Mat Bridge
DS32	Intermittent		0	0	Mat Bridge
DS34	Ephemeral		0	0	Mat Bridge
DS35	Perennial	Beaudette Brook	0	0	Mat Bridge
DS39	Perennial		0	0	Mat Bridge
DS46	Perennial	LaRoche Brook	0	0	Mat Bridge
DS51	Perennial		20	10	Temp. Culvert
DS60	Perennial	LaRoche Brook	0	0	Mat Bridge
D061	Perennial		0	0	Mat Bridge
DS74	Perennial	College Brook	146	49	Diversion, Trench & Mat Bridge
DS92	Intermittent		0	0	Mat Bridge
		Subtotal:	*166*	*59*	
Newington					
NS8	Intermittent		0	0	Mat Bridge
NS14	Ephemeral		0	0	Mat Bridge
NS36	Ephemeral		45	45	Temp. Culvert
NS50	Intermittent		0	0	Mat Bridge
NS107	Perennial		0	0	Mat Bridge
		Subtotal:	*45*	*45*	
		Total:	211	104	

Secondary Wetland and Stream Impacts

Secondary impacts include wetland conversion from a forested canopy to scrub-shrub and emergent due to tree removal within wetlands and upland stream buffer tree removal within 100 feet of perennial streams, 50 feet of intermittent streams and 25 feet of ephemeral streams.

The majority of the existing corridor is 100 feet wide; however the width of currently cleared and regularly maintained areas vary widely from nearly the entire 100 feet width to as narrow as 30 feet. To safely accommodate the proposed transmission line while meeting the applicable clearances for 115kV and the co-located distribution lines, the entire corridor will need to be cleared of target species to 100 feet in width. Capable species are those woody (tree) species that are capable of growing to a height that could pose a risk to the structures and conductor if they were to fall or come in contact with the conductor. Lower growing shrubs and herbaceous

vegetation will not be cleared as they will not grow up to a height that could endanger the line. Minimum clearances from all vegetation must be maintained, and routine maintenance clearing according to PSNH's vegetation clearing procedures and practices is an important component of the SRP operation[14].

Wetland areas within the surveyed treeline boundary were quantified within each town (Table 4). Temporary access routes were also established to facilitate the efficient removal of target species. The access roads in wetlands will consist of 16-foot wide timber mat roads, as necessary. Cleared wetlands will not be stumped or grubbed and PSNH will consult with individual landowners on the managementof cut trees. The remaining logs and slash will be removed from wetlands. Woody material will be either chipped or diced and windrowed in uplands or removed from the ROW. Chips generated from the tree clearing may be utilized for erosion control purposes. At the discretion of the environmental monitor, some woody material may be left in wetlands to avoid physical impacts to the wetland that would result from removing the wood.

Table 4. Forested wetland conversion by town

Town	Wetland Conversion (SF)	Wetland Conversion (acres)
Madbury	2,072	0.05
Durham	217,334	4.99
Newington	87,089	2.00
Portsmouth	11,305	0.26
Total:	317,800	7.30

Stream buffers function to protect the riparian areas of streams from sedimentation by trapping runoff, erosion by binding the soils near and along streambanks, and providing shade to keep water cool and for cover, plus other habitat benefits for wildlife and aquatic organisms. Tree removal within wetland areas near streams is included in the forested wetland conversion discussed above (Table 4). Proposed tree clearing of upland areas within 100 feet of perennial streams, 50 feet of intermittent streams, and 25 feet of ephemeral streams were quantified based on agency recommendations (Table 5). Cleared areas within these buffers will not be stumped or grubbed and ground disturbances will be limited to those associated with the logging equipment. Additionally, low-growing native shrubs and other species common within riparian buffers will remain. Over time, other shrub and low-growing woody species will colonize these areas helping to enhance and restore these important functions.

[14] Northeast Utilities, 2013. *Vegetation Clearing Procedures and Practices for Transmission Line Sections*. OTRM 230. Rev. 2 8/19/2013.

Table 5. Upland stream buffer clearing by town

Town	Perennial Stream Buffer (SF)	Intermittent Stream Buffer (SF)	Ephemeral Stream Buffer (SF)	Total (SF)
Madbury	7,383	0	0	7,383
Durham	53,348	11,453	4,221	69,022
Newington	5,010	4,691	1,119	10,820
Portsmouth	0	0	0	0
Total (SF):	65,741	16,144	5,340	87,225
Total (Acres):	1.51	0.37	0.12	2.00

Vernal Pool Impacts

No vernal pools were identified within the SRP corridor and no impacts are anticipated.

Effects on Wetland Functions and Values

Permanent impacts to wetlands and streams were avoided and minimized wherever possible. The remaining unavoidable permanent impacts to terrestrial (palustrine) wetlands are relatively minor in extent (792 SF) and distributed across 27 structures in 24 wetlands. Table 6 summarizes the total proposed permanent impact to each principal wetland function or value in each town. These data do not include functions or values that a wetland is classified as suitable for, as the wetland was not observed performing this function or value within or immediately adjacent to the ROW area. Additionally, because wetlands can have multiple principal functions or values, proposed permanent impacts to a given function or value will exceed the total permanent impact to each given wetland. The functions most commonly associated with the permanently impacted wetlands include groundwater discharge, floodflow alteration, production export, sediment/toxicant retention and wildlife habitat. The small footprint of the new transmission line structures is not expected to affect the existing wetland functions or values. The impacted wetland areas are primarily located within an existing electric corridor and are already subject to periodic maintenance including clearing and other repair work. Temporary impacts are anticipated to have minimal adverse effects on the functions and values associated with the impacted wetland systems. Applicable construction BMPs, on-site monitoring, and restoration of temporarily impacted areas according to standards and based on agency recommendations will be employed (Section 4.0).

Table 6. Permanent impacts to principal functions and values for wetlands in each town.

Town	Groundwater Discharge	Floodflow Alteration	Fish/Shellfish	Sediment/Toxicant Retention	Nutrient Removal	Production Export	Shoreline/Sediment Stabil.	Wildlife Habitat	Recreation	Education/Scientific	Uniqueness/Heritage	Visual Quality/Heritage	RTE Habitat
Madbury	199	199	199	0	0	199	199	199	0	199	0	199	0
Durham	94	3,550	3,550	3,570	0	3,553	0	3,600	3,550	3,550	3,550	3,570	0
Newington	298	1,979	1,786	1,940	154	1,959	0	1,817	1,786	1,786	1,786	1,786	0
Portsmouth	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	591	5,728	5,535	5,510	154	5,711	199	5,616	5,336	5,535	5,336	5,555	0

Tidal Buffer Zone (TBZ) Impacts

The 100-foot tidal buffer zones (TBZ) associated with Little Bay were mapped and permanent and temporary impacts were calculated based on the proposed underground design. The TBZ associated with the project include previously established residential areas including a yard, and structures in Durham and a maintained side yard in Newington; therefore the entire area was considered "developed." Total impacts to the TBZ are 11 SF of permanent impacts associated with at-grade manhole covers for an underground vault and 21,166 SF of temporary impacts associated with areas where the cable will be installed underground in a trench, and backfilled and restored to pre-construction conditions.

7 Mitigation Narrative

Permanent and secondary impacts that are unavoidable due to safety, engineering, or landownership issues or constraints will be mitigated through compensatory mitigation.

The mitigation plan was developed in accordance with the New Hampshire Wetland Rules (Env-Wt 800) and federal regulatory rules for mitigation in New England under Section 404 of the Clean Water Act (40 CFR Part 230). It incorporates views of state and regional federal regulators with the NHDES Wetlands Bureau, USACE, the US EPA, NHFG, and USFWS per pre-application meeting discussions, as recorded in meeting and phone conversation notes.

Compensatory Wetland Mitigation Narrative

Because of the linear nature of the Project and its wetland resource impacts, high value within-project mitigation would be difficult. The Project includes four towns, multiple watersheds and a variety of freshwater and estuarine resources. In consultation with NH DES and the US Army Corps of Engineers, payment into New Hampshire's Aquatic Resource Mitigation (ARM) Fund was determined to be appropriate mitigation for the 5,336 square feet of permanent estuarine impact, the 792 square feet of permanent terrestrial wetland impact, the 317,800 square feet of forested wetland conversion and 87,225 square feet of upland stream buffer clearing associated with the SRP. Calculations for payment into the In-Lieu Fee program based on the types and extent of impacts by town are shown in Table 7. The estimated total payment based on the latest 2016 ARM Fund Calculator is estimated $309,971.11, although this may change during the review process with NHDES and USACE, should design modifications result in changes in wetland impacts.

The Town of Durham provided a potential wetland restoration and upland buffer protection project, summarized below. The restoration concept has merit for compensation for different aspects of wetland resource impacts by the SRP if the regulatory agencies concur.

Durham

The Town of Durham has proposed an environmental mitigation project to reduce the amount of erosion from the Wagon Hill Farm shoreline bordering the Great Bay Estuary and the Oyster River. Wagon Hill Farm is Town-owned conservation land consisting of 139 acres with 1100 feet of tidal frontage on the Little Bay, Oyster River and Smith Creek, and 8.5 acres of tidal and freshwater wetlands. The project proposes to stabilize the existing eroded portions of the shoreline, which is the result of uncontrolled foot traffic along the shoreline. These pathways have eroded and the erosion has been exacerbated by natural conditions including wind, wave and ice action. This erosion is continuing to degrade shoreline and salt marsh habitats and has negative impacts on wildlife, shellfish, and fish habitats. The erosion stabilization would include both stabilizing and restoring the shoreline, as well as further measures to halt foot traffic in the sensitive areas by re-designing nearby walking paths to discourage off-path travel, fences and viewing platforms on the adjacent upland. A second habitat protection effort is a

footbridge proposed to be constructed over Davis Creek and adjacent wetlands to control off-path travel by people and pets.

The stabilization projects will help to protect the water quality and aquatic habitats of the local streams, adjoining bordering wetlands, and the Great Bay estuary including the adjacent Salt Marsh and Sparsely Vegetated Intertidal systems, both of which are Exemplary Natural Communities documented by NHNHB. Preliminary estimates suggest that approximately 700-900 square feet of salt marsh, plus approximately 1,100 linear feet of adjacent shoreline could be restored. Impacts to freshwater wetlands along Davis Creek are estimated as 500 square feet. The Town of Durham has recently partnered with UNH ecologists and DES coastal staff to develop strategies for restoring salt marsh and developing long-term stabilization along the shoreline. This partnership will bring current and potentially innovative techniques to addressing erosion, controlling freshwater runoff, and protecting from human-caused destabilization.

The Wagon Hill Farm shoreline stabilization project provides the opportunity to mitigate for unavoidable permanent impacts caused by SRP structures in freshwater wetlands (approximately 700 square feet in Durham), potentially 2,500 square feet of impact from concrete mattresses on tidal flats, and clearing of freshwater wetlands and streams as a result of tree removal within the SRP project corridor. It also provides the opportunity to restore sections of deteriorated or fully eroded salt marsh, and would further reduce sediment loading into critical estuarine habitats. The project has been estimated to cost $370,000, including $340,000 for shoreline restoration, $10,000 for a bridge over Davis Creek, and $20,000 to stabilize and restore Davis Creek Point. The Town of Durham is anticipating that Eversource's contribution of approximately $170,000 would complete the project, in addition to $115,000 from the Lois Brown Trust and approximately $84,000 to be raised by the town. The Durham Selectmen and Budget Committee have approved this project as part of the 2016 annual budget, pending regulatory permit approval for the Eversource contribution. Additional detail on the project is provided in Appendix F of this report within a memorandum regarding *Environmental Mitigation Project along the Wagon Hill Farm Shoreline* prepared by the Town of Durham Department of Public Works.

PSNH will continue to work with applicable parties to develop a mitigation package that will be acceptable to NHDES and USACE.

Table 7. Summary of impacts and estimated ARM Fund payment

Town	A: Secondary Impact: Forested Wetland Conversion (SF)	A1: Conversion Mitigation Area (15% of total area A)(SF)	B: Secondary Impact: Stream Buffer Clearing (SF)	B1: Conversion Mitigation Area (15% of total area B)(SF)	C: Permanent Impacts (SF)	Total Impacts for Mitigation by Town (SF) (Sum A1+B1+C)	ARM Payment (from NH DES ARM Fund Calculator by Town)[15] (USD)
Madbury	2,072	311	7,383	1107	199	1,617	$6,488.92
Durham (Freshwater)	217,334	32,600	69,022	10,353	214	43,167	$183,385.10
Durham (Tidal)	-	-	-	-	3,550	3,550	$30,162.72
Newington (Freshwater)	87,089	13,063	10,820	1,623	379	15,065	$66,079.42
Newington (Tidal)	-	-	-	-	1,786	1,786	$15,667.82
Portsmouth	11,305	1,696	0	0	0	1,696	$8,187.14
Total:	317,800	47,670	87,225	13,084	6,128	66,882	$309,971.11

[15] http://des.nh.gov/organization/divisions/water/wetlands/wmp/

Temporary Impacts Restoration Plan

Wetland and upland areas temporarily disturbed for access road and pole replacement activities will be restored. The likely wetland restoration areas correspond to the location of timber mats shown for the poles and access roads in wetlands on the construction plans. Once timber mats and other temporary wetland protections have been removed, any displaced or compacted topsoil will be smoothed or graded to match previous or adjacent soil elevations. Acquired upland and wetland topsoil or reused topsoil will be evaluated for project use in any areas requiring fill, and will be spread to a depth of 6 inches or to match adjacent grades, and moderately compacted. Areas with disturbed soils will be stabilized with upland or wetland seed mix of native and naturalized species along with annual ryegrass (for erosion control while the other seed germinates). Alternative seed mixes or stabilization methods may be negotiated with individual landowners for upland areas by the contractor, as long as these alternatives are equally protective of jurisdictional wetlands and waterbodies.

Areas of the fringing salt marsh that will be temporarily impacted by the underwater cable installation will be restored immediately following completion of the cable laying. Salt marsh peat will be salvaged within the impact area and stockpiled for replacement during restoration. The stockpiled peat blocks will be protected and maintained for the duration of the installation period. The underlying gravel substrates will be restored to match surrounding elevations. The peat blocks will be replaced and anchored with rebar stakes driven into the gravel. Any open interstices between the peat blocks will be filled with a mixed sand to cover exposed roots and maintain grades. The seaward face of the peat will be protected from ice and wave action with a coir log.

Construction and restoration will be done under the supervision of the Engineer and Restoration Specialist to ensure minimization of impacts to native vegetation and wildlife, and that all disturbed areas are stabilized.

Maintenance and Monitoring

The Restoration specialist will assure compliance with permit conditions during and after the construction activities, including one year of post-construction monitoring after one full growing season, and preparation of the appropriate compliance reports for submittal to NHDES. The monitoring will include a site inspection, cover estimates in restored wetlands, including the salt marsh, and uplands by species in random plots, photographs, and wildlife observations. Areas with less than 80% cover at the end of the growing seasons will require additional seed. Any areas with erosion will be repaired. Non-biodegradable erosion control materials will be removed as soon as they are no longer necessary. Other potential maintenance issues, such as erosion gullies or vandalism, will be documented and reported immediately to PSNH for repair.

Restored areas will be monitored for invasive species. Potential invasive species on this site include purple loosestrife, buckthorn, and autumn olive among others. Invasive plants will be pulled and removed from restoration areas and disposed of in a manner and location to preclude their survival or spread. A monitoring report will be submitted to the NHDES by

November of the year when construction commences and each additional year where construction is active following initial work until the project is complete and all areas are suitably stabilized.

Normandeau will provide construction oversight and mowing oversight to insure the contractors follow the planned access roads in wetlands and sensitive areas (rare species and sensitive archeological sites) via the use of barriers to demarcate and protect wetlands and sensitive areas. These barriers will be silt fence and/or haybales where sedimentation/erosion control is also needed, or construction barrier fencing where sedimentation/erosion control is not necessary.

8 NH NHB Review

PSNH and Normandeau have coordinated with NHNHB throughout the Project's design and development.

A copy of the NHNHB database results provided for the project is included below. Mapping and detailed records for identified species have been removed because the information is considered sensitive.

Additional information is included in Appendix C and Appendix D.

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Susan Hegarty, Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau
Date: 11/9/2015 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB15-3561 Town: Madbury, Durham, Newington, Portsmouth Location:
Description: Eversource is proposing to construct a new 13-mile 115kV transmission line between their Madbury and Portsmouth substations. It will predominantly follow existing ROW. It will consist primarily of overhead structures, but will have an underground section at UNH in Durham and will have a submarine segment under Little Bay. This is an update request. Our previously requested data expired on 10/2/2015. NHB file ID: NHB14-3618.

cc: Kim Tuttle

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

Comments: This review is a follow-up to NHB14-3618 (9/24/2014) and the NHB14-3618 Addendum (10/2/2014). Continued coordination with NHB and NH Fish & Game is needed as this project progresses through permitting.

Invertebrate Species	**State[1]**	**Federal**	**Notes**
Ringed Boghaunter (*Williamsonia lintneri*)	E	--	Contact the NH Fish & Game Dept (see below).

Natural Community	**State[1]**	**Federal**	**Notes**
Hemlock - beech - oak - pine forest	--	--	Threats include logging, introduction of invasive species, and direct destruction due to development.
High salt marsh	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.
Red maple - sensitive fern swamp	--	--	These swamps are influenced by groundwater seepage and springs which moderate water fluctuations and maintain conditions favorable for the accumulation of organic matter. The primary threats are changes to the hydrology of the wetland complex, particularly raising or lowering the water levels, and increased nutrient and pollutant input carried in by stormwater runoff.

Salt marsh system	--	--	Threats are primarily changes to the hydrology of the system, introduction of invasive species, and increased input of nutrients and pollutants.
Sparsely vegetated intertidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.
Subtidal system	--	--	Threats to these communities are primarily alterations to the hydrology of the wetland (such as alterations that might affect the sheet flow of tidal waters across the intertidal flat) and increased input of nutrients and pollutants in storm runoff.

Plant species	**State**[1]	**Federal**	**Notes**
Black Maple (*Acer nigrum*)	T	--	Threats are primarily damage to its floodplain or riverbank habitat, including changes to local hydrology, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and pollutants.
bulbous bitter-cress (*Cardamine bulbosa*)	E	--	This species occurs in forested swamps, low floodplain forest, and moist thickets.. Threats to the plants include canopy removal and destruction (draining) of its habitat.
crested sedge (*Carex cristatella*)*	E	--	This wetland species, which occurs in bogs, fens, seeps, and wet meadows, would be threatened by changes to local hydrology, including increased nutrient input from stormwater runoff, and sedimentation from nearby disturbance.
Engelmann's Quillwort (*Isoetes engelmannii*)*	E	--	Primarily vulnerable to changes to the hydrology of its wetland habitat, especially alterations that change water levels. It may also be susceptible to increased pollutants and nutrients carried in stormwater runoff.
great bur-reed (*Sparganium eurycarpum*)	T	--	Threats to aquatic species include changes in water quality, e.g., due to pollution and stormwater runoff, and significant changes in water level.
greater fringed-gentian (*Gentianopsis crinita*)*	T	--	Vulnerable to shading by invading trees and to disturbances that destroy plants or impede their ability to reproduce (such as mowing in the mid-summer while the plants are in bloom).
Marsh Elder (*Iva frutescens*)	T	--	Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.
Rigid Sedge (*Carex tetanica*)*	--	--	This plant relies on open habitat, and maintenance of the hydrology of any wetland where it occurs.
Sensitive species	T	T	Please contact NH Natural Heritage (271-2215 x 323) if project impacts could occur

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

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

Memo

in the area shown on the map.

Vertebrate species	State[1]	Federal	Notes
American Eel (*Anguilla rostrata*)	SC	--	Contact the NH Fish & Game Dept (see below).
Bald Eagle (*Haliaeetus leucocephalus*)	T	--	Contact the NH Fish & Game Dept (see below).
Banded Sunfish (*Enneacanthus obesus*)	SC	--	Contact the NH Fish & Game Dept (see below).
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Eastern Hognose Snake (*Heterodon platirhinos*)*	E	--	Contact the NH Fish & Game Dept (see below).
Grasshopper Sparrow (*Ammodramus savannarum*)	T	--	Contact the NH Fish & Game Dept (see below).
Least Bittern (*Ixobrychus exilis*)	SC	--	Contact the NH Fish & Game Dept (see below).
Northern Black Racer (*Coluber constrictor constrictor*)	T	--	Contact the NH Fish & Game Dept (see below).
Osprey (*Pandion haliaetus*)	SC	--	Contact the NH Fish & Game Dept (see below).
Sea Lamprey (*Petromyzon marinus*)	SC	--	Contact the NH Fish & Game Dept (see below).
Sedge Wren (*Cistothorus platensis*)	E	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).
Swamp Darter (*Etheostoma fusiforme*)	SC	--	Contact the NH Fish & Game Dept (see below).
Upland Sandpiper (*Bartramia longicauda*)	E	--	Contact the NH Fish & Game Dept (see below).

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

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

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

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

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172 Pembroke Rd.
Concord, NH 03301

9 NH Programmatic General Permit (PGP) Requirements

U.S. Army Corps of Engineers New Hampshire PGP Appendix B – Corps Secondary Impacts Checklist

Note: U.S. Army Corps of Engineers data sheets will be provided electronically as part of NH SEC application.

US Army Corps of Engineers®
New England District

Programmatic General Permit (PGP)
Appendix B - Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to www.nae.usace.army.mil/regulatory, "Forms/Publications" and then "Application and Plan Guideline Checklist." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- Corps application form (ENG Form 4345) as appropriate.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible black and white (no color) plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
- Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. Don't use local datum. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean low lower water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
- Horizontal state plane coordinates in U.S. survey feet based on the [insert state grid system] for the [insert state] [insert zone] NAD 83.
- Show project limits with existing and proposed conditions.
- Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
- Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the ordinary high water in inland waters and below the high tide line in coastal waters.
- Delineation of all waterways and wetlands on the project site, including vernal pools:
- Use Federal delineation methods and include Corps wetland delineation data sheets. See GC 2; Endnotes 1, 6, 7 and 15 in Appendix A; and www.nero.noaa.gov/hcd for eelgrass survey guidance.
- Appendix A, (e) Moorings, contains eelgrass survey requirements for the placement of moorings.
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.

US Army Corps of Engineers®
New England District

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

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

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*		
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?		
2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools (see PGP, GC 26 and Appendix A)? Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) website, www.nhnaturalheritage.org, specifically the book Natural Community Systems of New Hampshire.		
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?		
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.)		
2.5 The overall project site is more than 40 acres.		
2.6 What is the size of the existing impervious surface area?		
2.7 What is the size of the proposed impervious surface area?		
2.8 What is the % of the impervious area (new and existing) to the overall project site?		
3. Wildlife	Yes	No
3.1 Has the NHB determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require a NHB determination.)		
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)?		
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		
3.5 Are stream crossings designed in accordance with the PGP, GC 21?		
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		
5. Historic/Archaeological Resources		
For a minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review**)** shall be sent to the NH Division of Historical Resources as required on Page 5 of the PGP**		

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

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

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More details for each question are included below.

Supplemental Corps Appendix B Narrative

1. Impaired Waters

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

The majority of the SRP corridor is within 1 mile upstream of an impaired water, according to the mapping provided by the NH DES and referenced on the Appendix B form. Much of the project area is developed, including the Durham area near UNH and portions of Newington and Portsmouth. Wetlands and stream impacts have been avoided and minimized to the greatest extent practicable. Construction and erosion control BMPs will be employed throughout course of the project and maintaining water quality will be a priority. Erosion control measures will be installed prior to construction, maintained throughout the active phases of work, and disturbed areas will be restored. The permanent impacts associated with new transmission structures will not have an adverse impact on water quality.

2. Wetlands

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

Streams, brooks and rivers were delineated in the field by experienced wetland scientists and have been included on project plans and mapping. Permanent impacts to streams have been avoided and the majority of the other streams located within the project corridor will be temporarily spanned with timber matting resulting in no impact to the bed and banks. Three streams will likely require temporary culverts during construction. One stream will be crossed via trench during the installation an underground section of the line. Stream crossings and temporary culverts have been designed in accordance with the PGP, GC 21 (see 3.5, below). Please refer to NH DES permit narrative (Section 6) and attached Natural Resource Existing Condition Report (Appendix A) for additional detail.

2.2 Are there proposed impacts to SAS, shellfish beds, special wetlands and vernal pools?

Temporary impacts are proposed within salt marsh wetlands and mud flats, which are both considered Special Aquatic Sites (SAS). Shellfish beds are present within the existing Cable Area; however it is permanently closed to harvesting. Two fringing salt marshes (special wetlands) will be temporarily impacted during the Little Bay cable laying, and will be restored. No vernal pools will be impacted. Please refer to NH DES permit narrative (Section 6) and attached Natural Resource Existing Condition Report (Appendix A) and the Natural Resource Impact Assessment (Appendix B) for additional detail.

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

Yes. Wetland crossings will be temporary and utilize timber matting where necessary (if frozen ground conditions are not present). Streams and other areas of horizontal flow will be accommodated through the utilization of temporary timber mat bridges and allow for hydrology, sediment transport and wildlife passage. Erosion controls, such as straw wattles and bark mulch berms, will be used around matting in wetlands so as to not form a barrier like silt fence does. Please refer to NH DES permit narrative (Section 6) and attached Natural Resource Existing Condition Report (Appendix A) and the Natural Resource Impact Assessment (Appendix B) for additional detail.

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

Clearing of trees within riparian buffer areas will be necessary to safely accommodate the proposed SRP transmission line. The ROW currently contains a smaller distribution line in a cleared corridor approximately 60-feet wide, and has not been cleared to the full 100-foot width needed for the SRP in most areas. Cleared areas will not be stumped or grubbed and ground disturbances will be minor. Timber matting will be used during clearing activities within or over delineated wetlands and near streams. Some tree clearing near streams at the edges of the corridor and within riparian buffers will be required, however low-growing shrub and other common riparian species will remain and it is anticipated that these species will colonize newly opened areas with limited impacts to riparian habitat.

2.5 The overall project site is more than 40 acres.

Yes.

2.6 – 2.8 What is the size of the existing impervious surface area? What is the size of the proposed impervious surface area? What is the % of the impervious area (new and existing) to the overall project site?

New impervious surfaces resulting from the 12.9-mile long SRP will be limited to the bases of the transmission structures, estimated as 7,234 square feet. Construction and work area access will be temporary and no new permanent roads will be constructed. Substation modification will be restricted to the existing substation footprint within perimeter fencing and substation expansions are not necessary.

3. Wildlife

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

The NHNHB, US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have been consulted throughout the SRP design process. Known records of rare species, exemplary natural communities, Federal and State threatened and endangered species and potential habitat for these species were received and reviewed in the field where appropriate. Appropriate construction and erosion BMPs will be employed to protect water quality during and after construction and actions recommended by resource agencies to protect wildlife and other habitat areas will be followed. Please refer to NH DES permit narrative (Section 6), the Rare, Threatened, and Endangered Species and Exemplary Natural Community Report (Appendix C), and the Biological Assessment for the Northern Long-eared Bat for the Seacoast Reliability Project (Appendix D).

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

Yes. Multiple portions of the project pass through these areas along the existing ROW corridor. Appropriate construction and erosion BMPs will be employed to protect water quality during and after construction and actions recommended by resource agencies to protect wildlife and other habitat areas will be followed. Please refer to NHDES permit narrative (Section 6), the Rare, Threatened, and Endangered Species and Exemplary Natural Community Report (Appendix C).

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)?

The SRP is located completely within existing electrical distribution/transmission corridors that have been subject to periodic and routine maintenance and disturbances for decades. The ROW also includes roads, railroads, residential, commercial and industrial areas along with natural areas. The submarine portion of the SRP is located within a mapped Cable Area through Little Bay that has historically been utilized by other submarine cables (current cables are inactive and will not be used).

3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?

No. The project is a utility project.

3.5 Are stream crossings designed in accordance with the PGP, GC 21?

Yes. All stream crossings will be temporary and not impact the bed or banks of the streams, with the exception of three streams: two where temporary culverts may be needed during construction to facilitate equipment needed to install the new structures; and one perennial stream where trenching for underground conduit will occur. Stream banks in these areas will be restored upon completion of construction. The remaining stream crossings will be made using timber matting and surrounded by appropriate erosion control BMPs. These areas will be inspected during construction and maintained as appropriate. Matting will be removed promptly when no longer needed. Please refer to NH DES permit narrative (Section 6, Direct Stream Impacts) and attached Natural Resource Existing Condition Report (Appendix A) and the Natural Resource Impact Assessment (Appendix B) for additional stream details.

4. Flooding/Floodplain Values

4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?

Yes, the SRP corridor crosses several floodplain areas and five new structures (a total of 6 individual poles) will be located within Zone A/AE, or 100-year floodplains. The underground and submarine portions of the project within and adjacent to the floodplains associated with College Brook and Little Bay (respectively) will all be installed below grade and restored to original grade with no effect on the flood storage of the affected areas.

4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?

Minimal flood storage losses are anticipated due to the five new structures or the underground/submarine portions of the project and therefore compensatory flood storage will not be provided. Three existing structures will be removed from floodplain areas resulting in a net increase of only two transmission structures and areas surrounding the proposed new structures will be restored to their original grade following installation.

5. Historic/Archaeological Resources

Because this is a major impact project, an RPR form has been filed with the NH Division of Historical Resources (NHDHR). The NHDHR has been consulted during the SRP development and an extensive Archaeological and Historical Resources review has been completed in accordance with NHDHR requirements for new transmission line projects. Please refer to these reports in SEC Appendices 9, 10, and 11 for additional information.

NH Division of Historic Resources (NHDHR) Coordination

See 5. above.

Endangered Species Act

PSNH and Normandeau have coordinated with the NHF&G and USFWS throughout Project development. No permanent impacts to endangered species or critical habitat are proposed.

See Appendices C and D for additional information.

10 Designated River Check (RSA 482-A:3,I(d)(2))

The Project will span the Oyster River (no direct impacts) and pass through portions of the Lamprey River Watershed, both of which are currently protected under the Rivers Management & Protection Act (RMP)(RSA 483).

A complete copy of this application has been sent via certified mail to the Local River Advisory Committee (LAC) for each designated river/watershed. Contacts are listed below and were updated in January 2016[16]. Copies of the receipts from the mailing are included below.

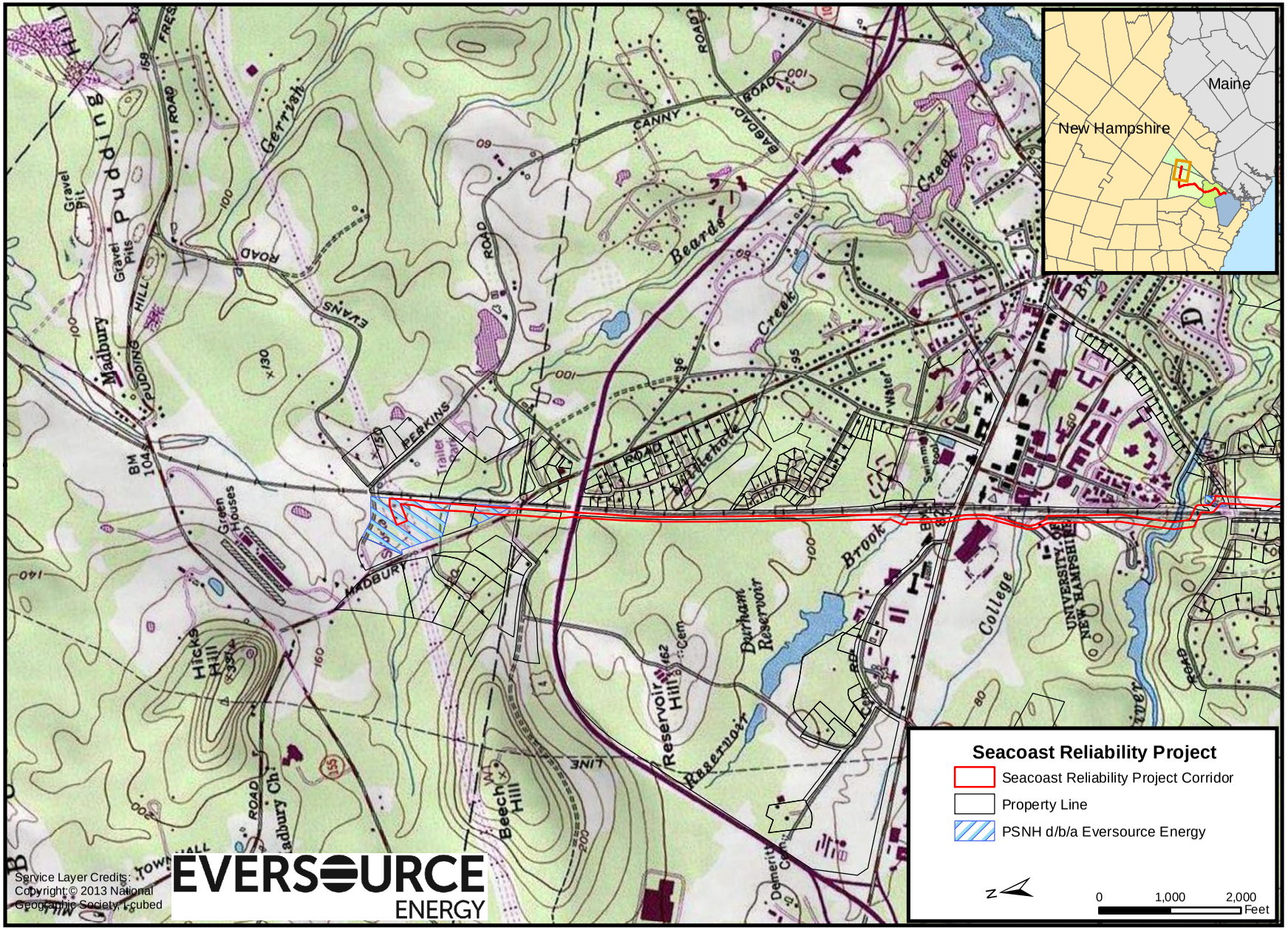
Oyster River Local Advisory Committee
Eric Fiegenbaum, Chair
6 Moharimet Drive
Madbury, NH 03823
eric@lefh.net
www.oysterriverlac.org
603-750-7519

Lamprey Rivers Local Advisory Committee
Richard Snow, Chair
P.O. Box 10037
Candia, New Hampshire 03040-0037
rherbertsnow@netscape.net
www.lampreyriver.org/
603-483-2722

[16] http://des.nh.gov/organization/divisions/water/wmb/rivers/lac/documents/lac_contacts.pdf

11 USGS Map (Env-Wt 501.02(a)(4) & 505.01(g))

A U. S. Geological Survey (USGS) topographic map set upon which the property lines and Project limits have been outlined (surveyed property boundaries not required) are included below. The maps are at an unaltered scale of 1:24,000 or 1" = 2,000 feet (1:25,000 metric map) and due to the linear nature of the Project, are presented on sequential sheets from the Madbury Substation to the Portsmouth Substation.



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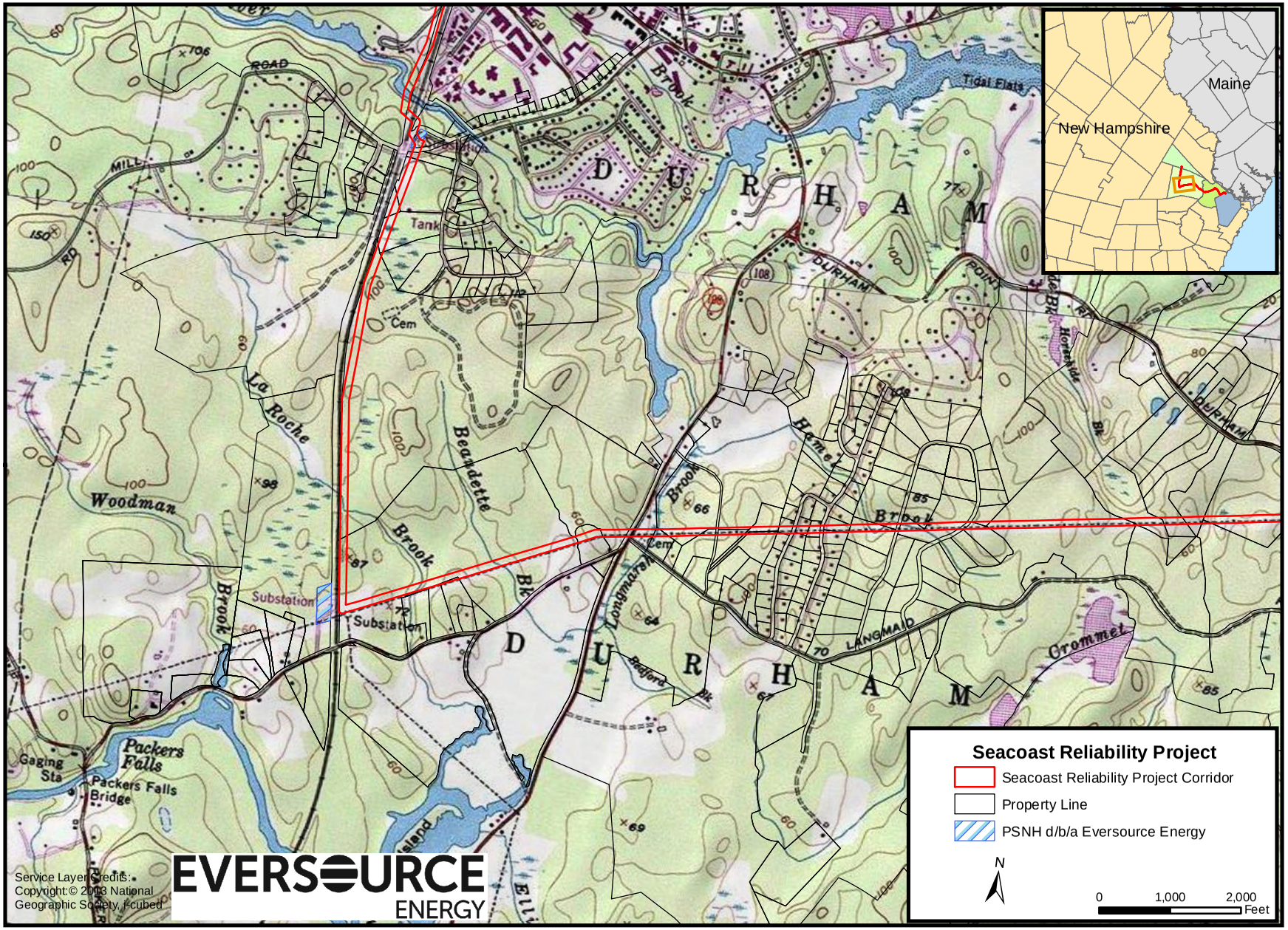

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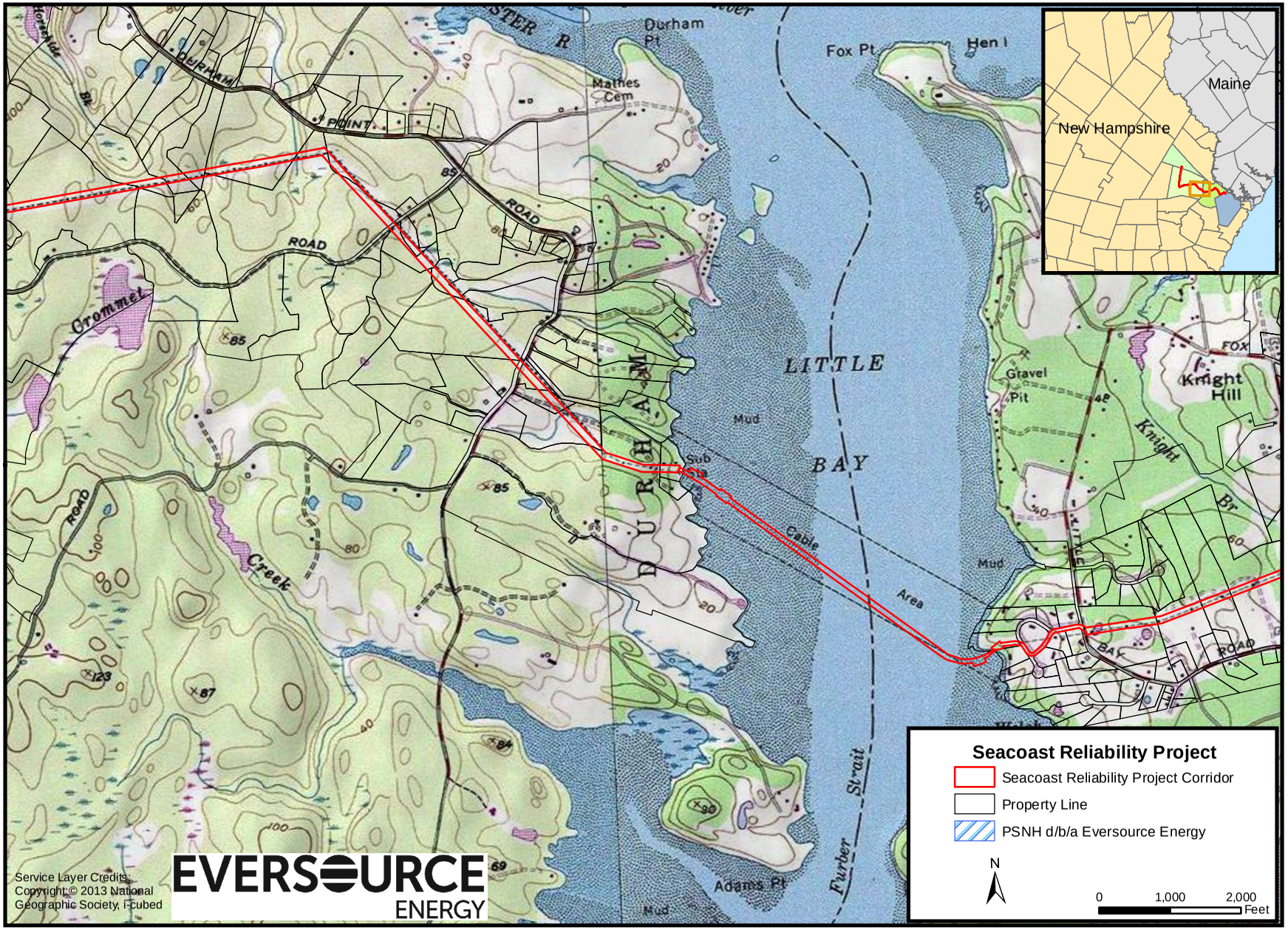
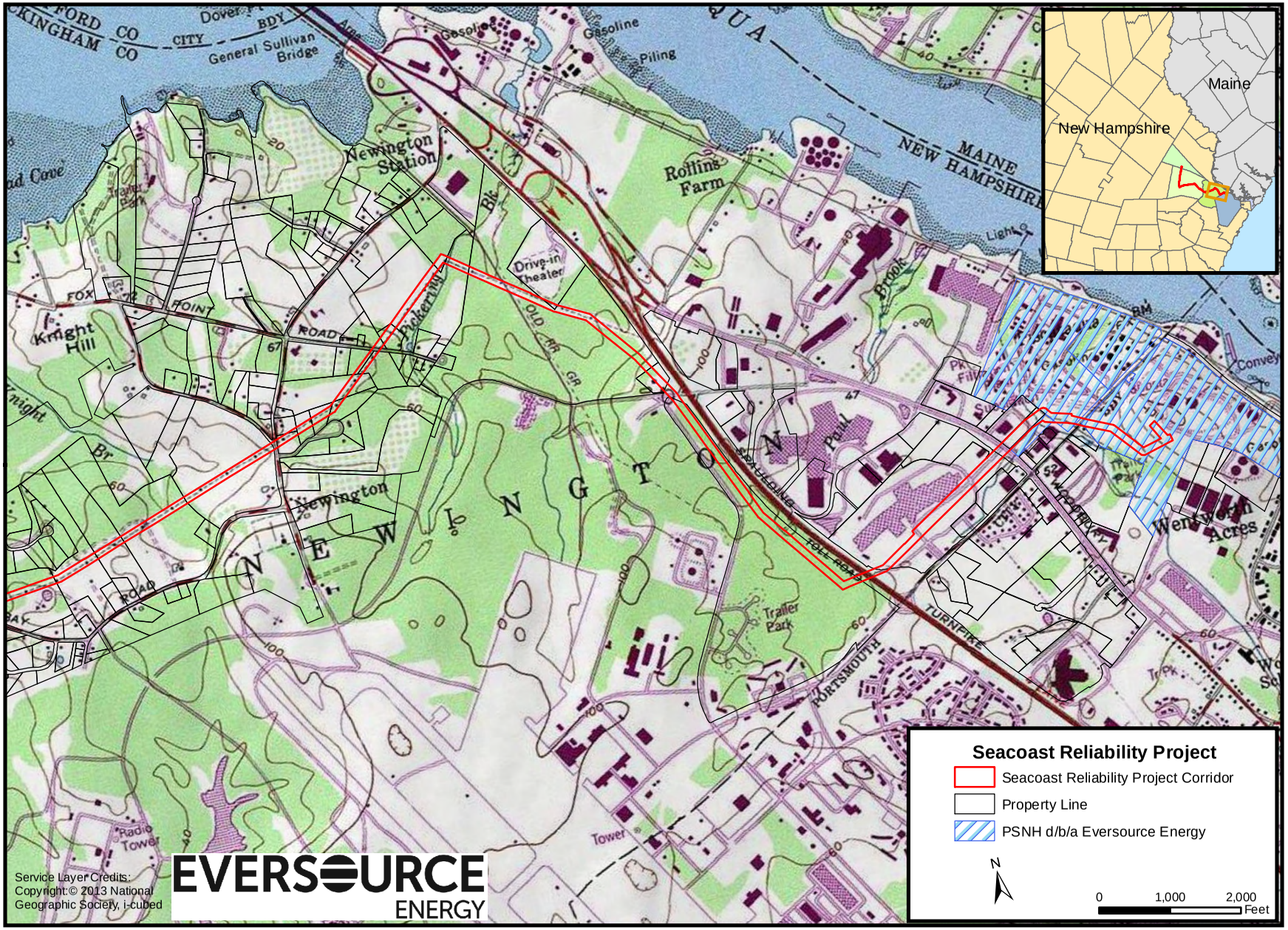


Document Path J:\Projects\PSNH_F107\MXD\PS_107_Wetland_Permit_010816.mxd



Document Path J:\Projects\PSNH_F107\MXD\PS_107_Wetland_Permit_010816.mxd

12 Photographs (Env-Wt 501.02(a)(3) & 505.01(i))

Dated, labeled color photographs of the resources where impacts are proposed are included below.

Eversource Energy Seacoast Reliability Project
Wetland Impact Photographs: Madbury

Wetland MW1: View northwest

Wetland MW2: View west

Eversource Energy Seacoast Reliability Project
Wetland Impact Photographs: Durham

Wetland DNW2: View northeast (F#14)

Wetland DW2: View northeast (F#5)

Wetland DW4: View southeast (F#15) along road

Wetland DW5: View east

Wetland DW6: View north (F#3)

Wetland DW7: View north

Wetland DW9: View north

Wetland DW10: View northwest (F#3)

Wetland DW12: View northeast (F#7)

Wetland DW13: View north

Wetland DW14: View west (F#24)

Wetland DW16: View northwest (F#1)

Wetland DW17: View east

Wetland DW18: View east (F#5)

Wetland DW20: View southeast (F#10)

Wetland DW21: View north

Wetland DW22: View northwest (F#2)

Wetland DW24: View north (F#7)

Wetland DW25: (F#6)

Wetland DW26: View south (F#3)

Wetland DW27: (F#4)

Wetland DW28: View east (F#1)

Wetland DW29: (F#12)

Wetland DW30: View northwest (F#9)

Wetland DW31: (F#18)

Wetland DW33: (F#9)

Wetland DW36: View north

Wetland DW37: (F#12)

Wetland DW38: View southwest

Wetland DW40: View west

Wetland DW41: (F#5X)

Wetland DW44: View north

Wetland DW45: (F#13)

Wetland DW47: (F#17)

Wetland DW48: View east

Wetland DW49: (F#5)

Wetland DW50: View north

Wetland DW52: View east

Wetland DW54: View north

Wetland DW56: View south

Wetland DW58: View east

Wetland DW65: (F#10)

Wetland DW67: (F#4)

Wetland DW69: (F#5)

Wetland DW74: View east

Wetland DW76: View northeast

Wetland DW77: View west

Wetland DW79: View north


Wetland DW80: View south


Wetland DW91: View west


Wetland DW93: View west


Wetland DW94: View southwest


Wetland DW100: View east (F#3)


Wetland DW101: View west (F#5)

Wetland DW105: View west

Eversource Energy Seacoast Reliability Project
Stream Impact Photographs: Durham

Stream DS8: View upstream (F#1)
[Mat Bridge – No Impacts]

Stream DS32: View downstream (F#7)
[Mat Bridge – No Impacts]

Stream DS34: View downstream (F#1)
[Mat Bridge – No Impacts]

Stream DS35: (F#2) (Beaudette Brook)
[Mat Bridge – No Impacts]

Stream DS39: (F#5open)
[Mat Bridge – No Impacts]

Stream DS46: View north (LaRoche Brook)
[Mat Bridge – No Impacts]

Stream DS51: (F#1)
[Temporary Culvert]

Stream DS60: View west (LaRoche Brook)
[Mat Bridge – No Impacts]

Stream DS61: (F#1)
[Mat Bridge – No Impacts]

Stream DS74: View west (College Brook)
[Diversion, Trench & Mat Bridge]

Stream DS92: View west
[Mat Bridge – No Impacts]

Eversource Energy Seacoast Reliability Project
Wetland Impact Photographs: Newington


Wetland DNW2: View west


Wetland NW1: View south


Wetland NW3: View west


Wetland NW4: View south (F#10)


Wetland NW6: View southwest (F#16)


Wetland NW9: View southwest

Wetland NW10: View south (F#8)

Wetland NW11: View west

Wetland NW12: View west (F#13)

Wetland NW13: View southeast

Wetland NW16: View west (F#14)

Wetland NW17: View west

Wetland NW18: View west (F#1)

Wetland NW19: View northwest

Wetland NW21: View southeast

Wetland NW22: View west (F#8)

Wetland NW24: View east (F#3)

Wetland NW26: View west (F#12)


Wetland NW28: View east (F#3)


Wetland NW30: View southwest (F#11)


Wetland NW32: View east (F#2)


Wetland NW34: View south (F#1)


Wetland NW35: View west (F#21)


Wetland NW37: View across wetland (F#3Y)

Wetland NW42: View west (F#5)

Wetland NW43: View south (F#9)

Wetland NW45: View north

Eversource Energy Seacoast Reliability Project
Stream Impact Photographs: Newington

Stream NS8: View upstream (F#2)
[Mat Bridge – No Impacts]

Stream NS14: View downstream (F#5)
[Mat Bridge – No Impacts]

Stream NS36: Ephemeral Stream/Ditch
[Temporary Culvert]

Stream NS50: View upstream (F#3)
[Mat Bridge – No Impacts]

Stream NS107: View downstream (North)
[Mat Bridge – No Impacts]

Eversource Energy Seacoast Reliability Project
Wetland Impact Photographs: Portsmouth

Wetland PW2: View north (F#13)

Wetland PW5: View south (F#7)

13 Tax Maps (Env-Wt 501.02(a)(1)& 505.01(e))

Tax maps for Project area are included below. Parcels are also included on the detailed environmental plans included below in Section 16.

Town of Madbury, New Hampshire

Tax Parcel Index Map

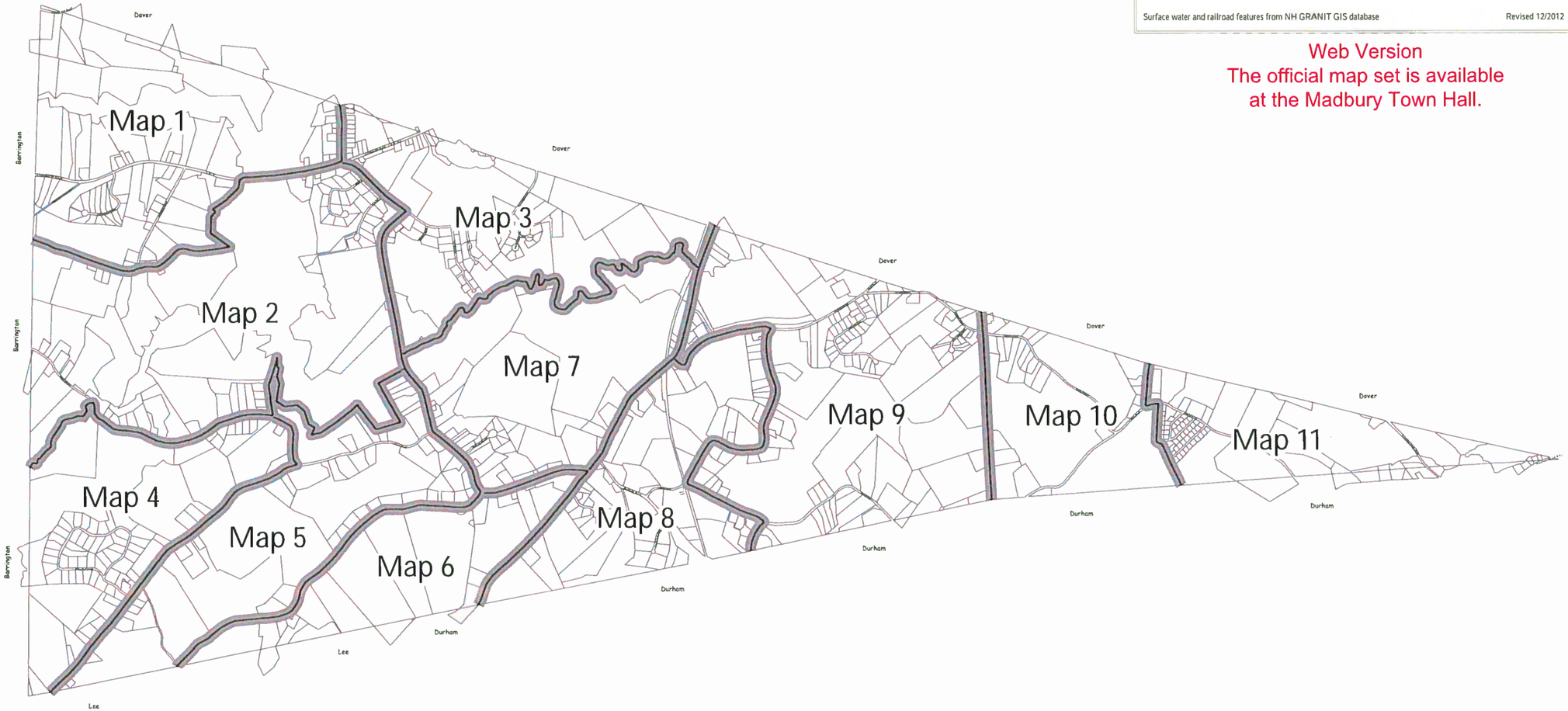
N

This map set is maintained for tax assessment purposes only. It is not intended for legal description or conveyance. No other use is authorized.

Surface water and railroad features from NH GRANIT GIS database

Revised 12/2012

Web Version
The official map set is available at the Madbury Town Hall.



Town of Madbury, New Hampshire

Tax Parcel Map 8

14:C — Tax Parcel [lot:sublot]

Adjacent Map tax parcels

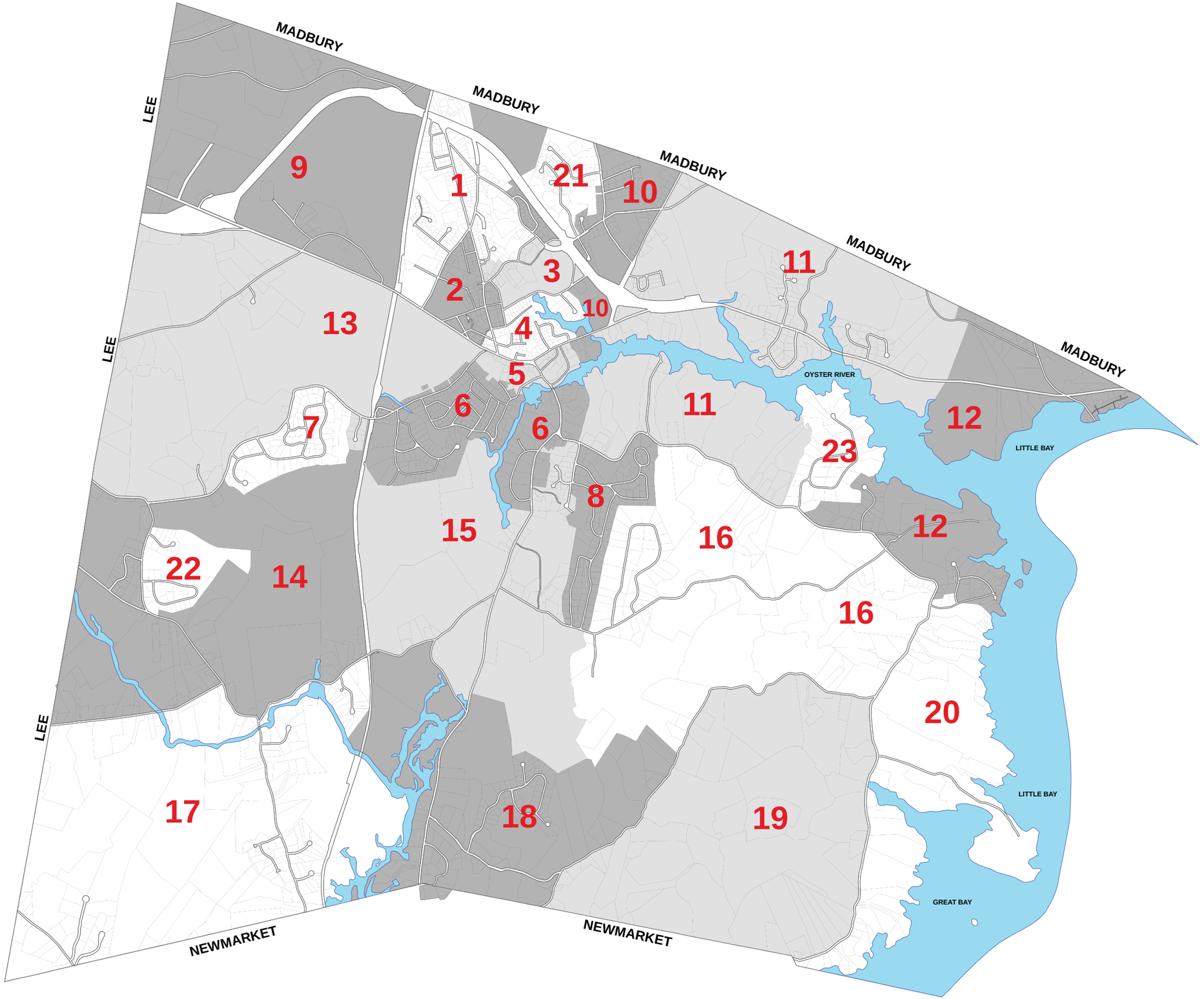
0 500 1,000 2,000 Feet

Surface water and railroad features from NH GRANIT GIS database.

Revised 12/2012

Web Version
The official map set is available
at the Madbury Town Hall.

Knox Marsh Road
Kelley Road
Pudding Hill Road
Forest Road
Madbury Woods
Town Hall Road
S.R. 155
Madbury Road
Mutex Lane
Bridge Circle
Perkins Road
Perkins Rd
Lee Road
Sarah Paul Hall Rd
Longacre Rd
Durham
Durham



COMPOSITE MAP

N
W E
S

Grid North
NH State Plane
NAD 1983 (Feet)

0 1,000 2,000 4,000 6,000 8,000
Feet

PROPERTY MAP
DURHAM
NEW HAMPSHIRE

Mapsheet

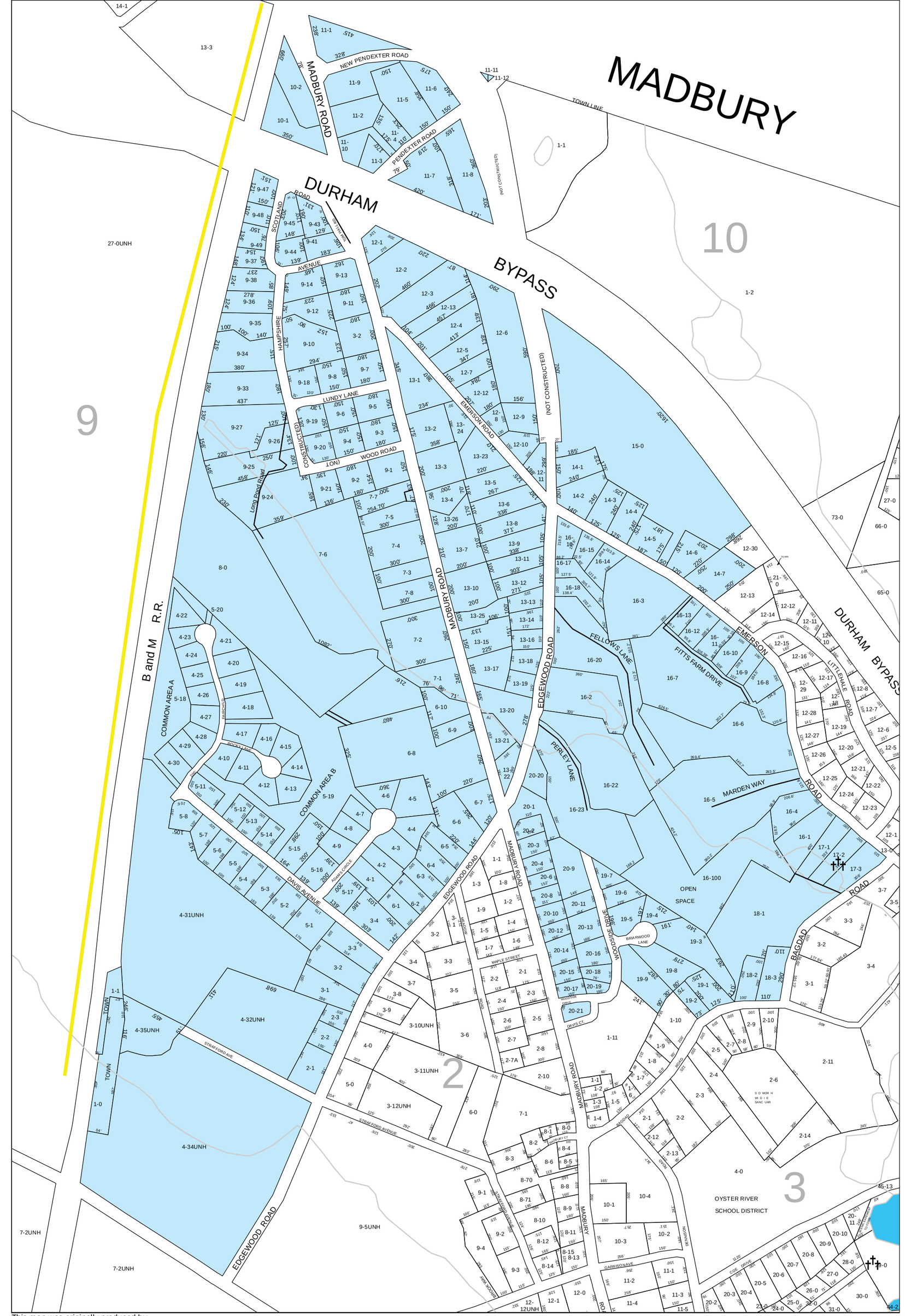
1	16
2	17
3	18
4	19
5	20
6	21
7	22
8	23
9	
10	
11	
12	
13	
14	
15	

DESCRIPTION

This is an updated property map of the Town of Durham, NH.
The map was produced by digitizing parcel changes from printouts of existing tax maps at nominal mapscale. Corresponding updates were made to the lot annotation layer.

Originally, this map was produced by Strafford Regional Planning Commission in October 2004, but, has been modified for web deployment by the Department of Public Works.

THIS MAP IS FOR ASSESSMENT PURPOSES.
IT IS NOT INTENDED FOR LEGAL DESCRIPTION OR CONVEYANCE.



This map was originally produced by Strafford Regional Planning Commission in October 2004, and was updated by the Town of Durham in February 2013.
THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT INTENDED FOR LEGAL DESCRIPTION OR CONVEYANCE.

Legend

Adjacent Map Sheets

Current Map Sheet

Cemetery

PROPERTY MAP

DURHAM

NEW HAMPSHIRE

N

1 inch = 435 feet

Map 1

Map 6

N

PROPERTY MAP

DURHAM

NEW HAMPSHIRE

Legend

- Adjacent Map Sheets
- Current Map Sheet
- † † Cemetery

1 inch = 500 feet

This map was originally produced by Strafford Regional Planning Commission in October 2004, and was updated by the Town of Durham in March 2014.

THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT INTENDED FOR LEGAL DESCRIPTION OR CONVEYANCE.

Map 9

N

PROPERTY MAP
DURHAM
NEW HAMPSHIRE

Legend

- Adjacent Map Sheets
- Current Map Sheet
- Cemetery

1 inch = 840 feet

This map was originally produced by Strafford Regional Planning Commission in October 2004 and updated by the Town of Durham in February 2013.

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MADBURY

LEE

UNH

HORTICULTURE FARM

DURHAM BYPASS

CONCORD TURNPIKE

DURHAM

BYPASS

B and M R.R.

MADBURY ROAD

LEE ROAD

BEECH HILL ROAD

TECHNOLOGY DRIVE R.O.W.

WOODWARD'S RD

MAST ROAD

SHANNON RD

DURHAM RESERVOIR

COMMON AREA A

COMMON AREA B

TOWN

STATE OF N.H.

13

1

Map 13

N

PROPERTY MAP
DURHAM
NEW HAMPSHIRE

Legend

- Adjacent Map Sheets
- Current Map Sheet
- Cemetery

1 inch = 935 feet

This map was originally produced by Strafford Regional Planning Commission in October 2004 and updated by the Town of Durham in January 2014.

THIS MAP IS FOR ASSESSMENT PURPOSES ONLY.
IT IS NOT INTENDED FOR LEGAL DESCRIPTION OR CONVEYANCE

Map 14

N

PROPERTY MAP
DURHAM
NEW HAMPSHIRE

Legend

- Adjacent Map Sheets
- Current Map Sheet
- Cemetery

1 inch = 935 feet

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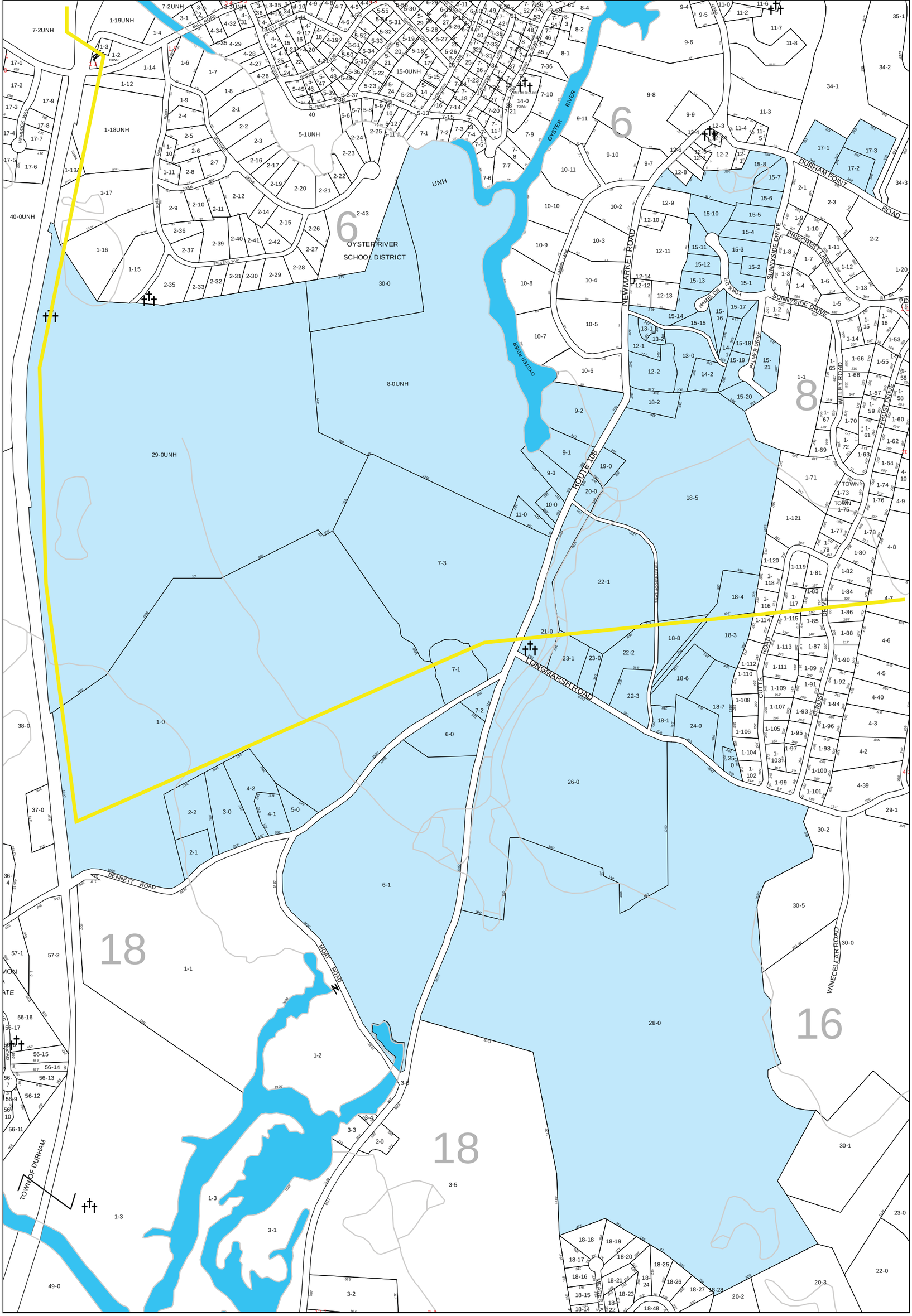


This map was originally produced by Strafford Regional Planning Commission in October 2004, and was updated by the Town of Durham in February 2014.

THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT INTENDED FOR LEGAL DESCRIPTION OR CONVEYANCE.

Legend

- Adjacent Map Sheets
- Current Map Sheet
- Cemetery

PROPERTY MAP

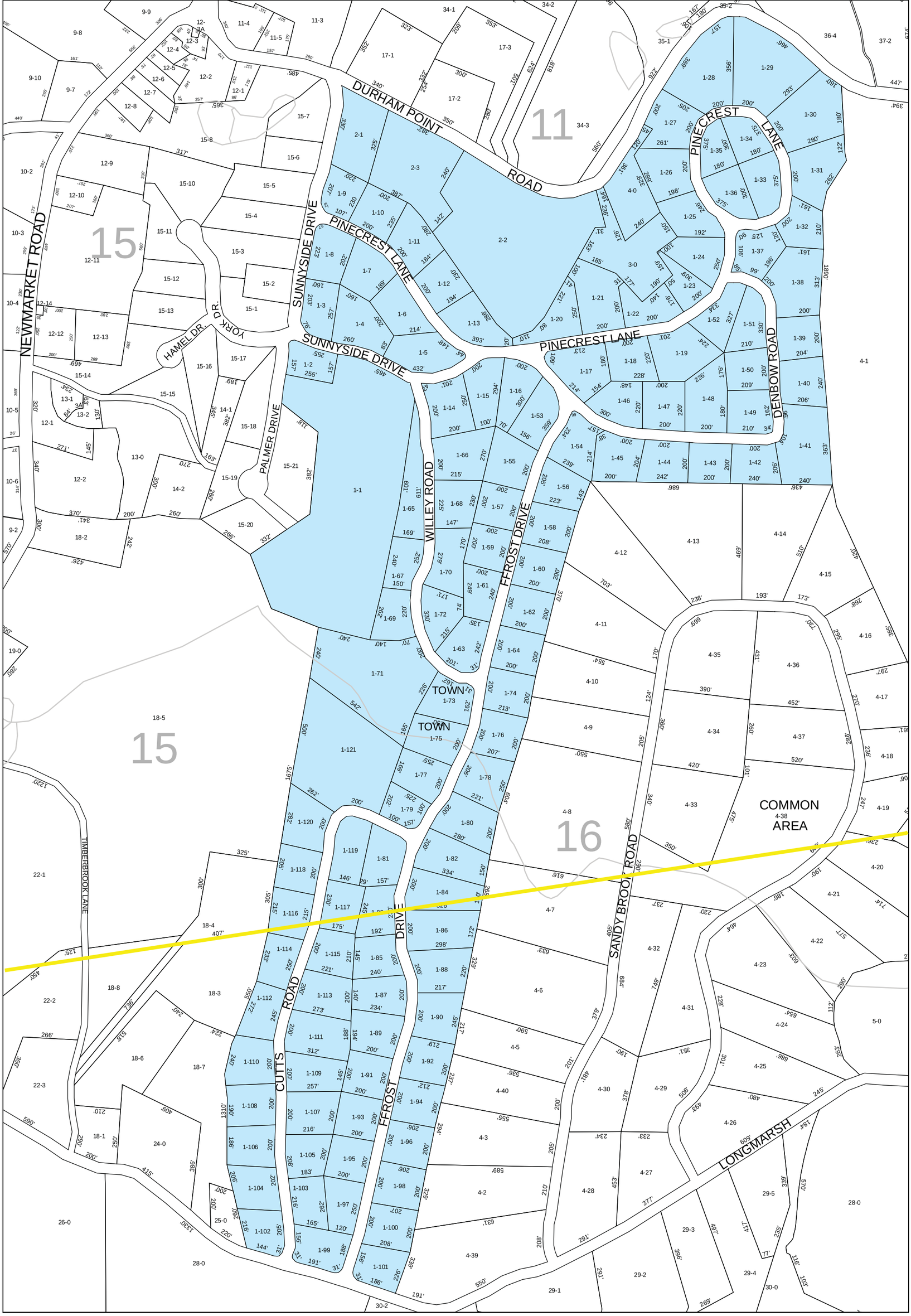
DURHAM

NEW HAMPSHIRE

N

1 inch = 757 feet

Map 15



This map was originally produced by Strafford Regional Planning Commission in October 2004, and was updated by the Town of Durham in June 2007.

THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT INTENDED FOR LEGAL DESCRIPTION OR CONVEYANCE.

Legend

- Adjacent Map Sheets
- Current Map Sheet

PROPERTY MAP

DURHAM

NEW HAMPSHIRE

N

Map 8

1 inch equals 410 feet

Map 16

N

PROPERTY MAP
DURHAM
NEW HAMPSHIRE

Legend

- Adjacent Map Sheets
- Current Map Sheet

1 inch = 975 feet

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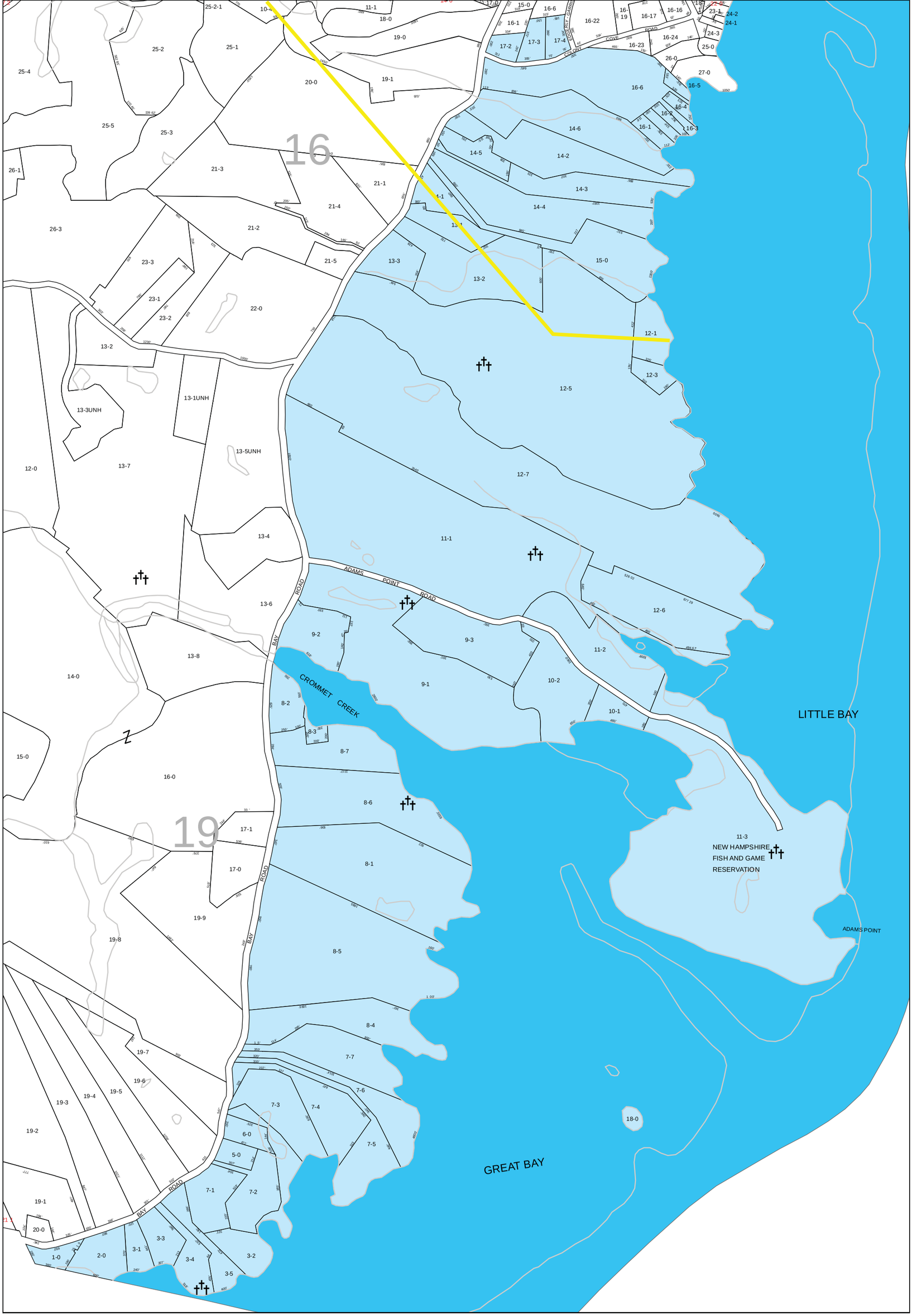


This map was originally produced by Strafford Regional Planning Commission in October 2004, and was updated by the Town of Durham in February 2014.

THIS MAP IS FOR ASSESSMENT PURPOSES. IT IS NOT INTENDED FOR LEGAL DESCRIPTION OR CONVEYANCE.

Legend

- Adjacent Map Sheets
- Current Map Sheet
- Cemetery

PROPERTY MAP

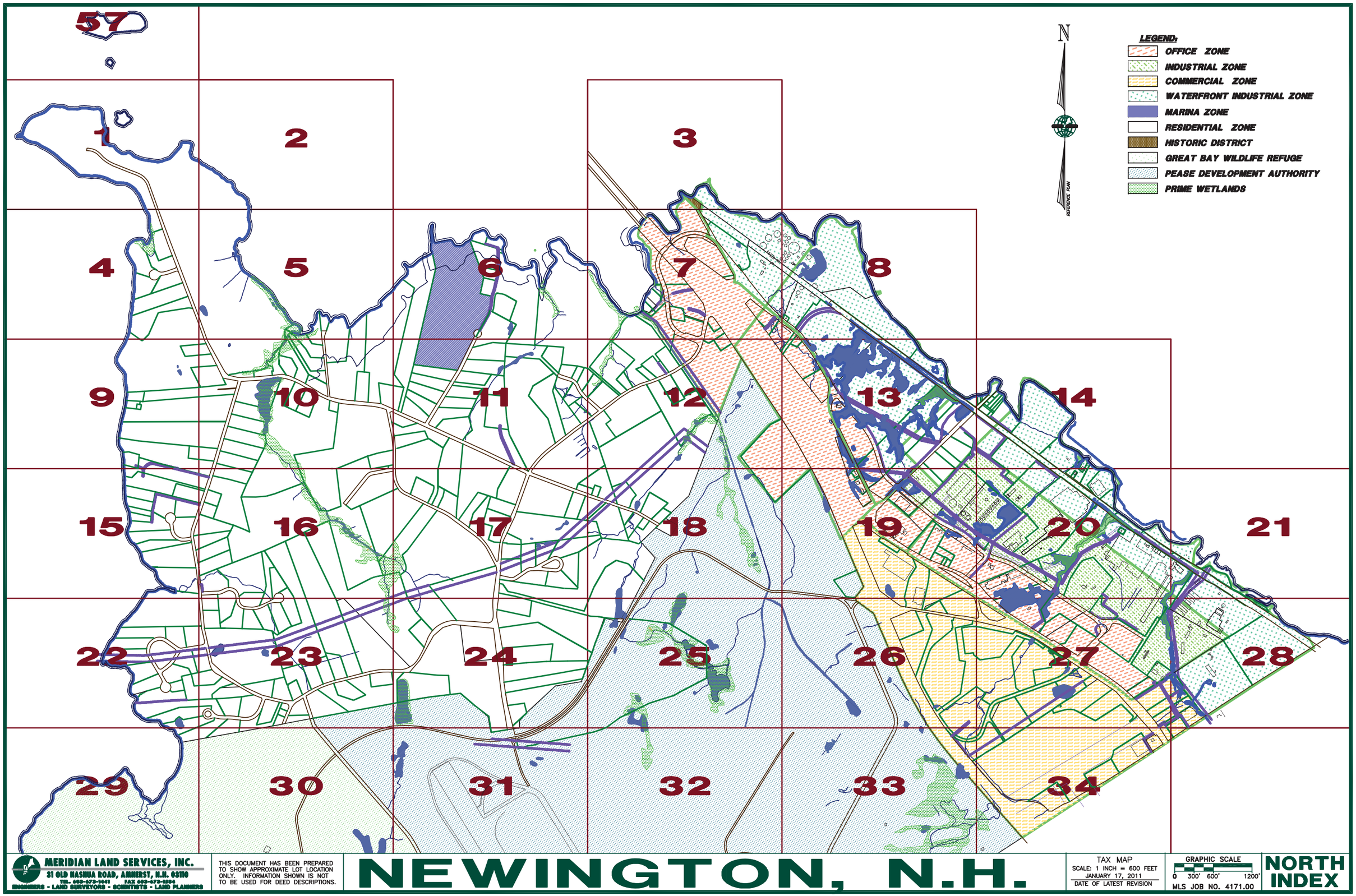
DURHAM

NEW HAMPSHIRE

N

Map 20

1 inch = 777 feet



MERIDIAN LAND SERVICES, INC.
31 OLD NASHUA ROAD, AMHERST, N.H. 03110
TEL. 603-673-1441 FAX 603-673-1564
ENGINEERS - LAND SURVEYORS - SCIENTISTS - LAND PLANNERS

THIS DOCUMENT HAS BEEN PREPARED TO SHOW APPROXIMATE LOT LOCATION ONLY. INFORMATION SHOWN IS NOT TO BE USED FOR DEED DESCRIPTIONS.

NEWINGTON, N.H.

TAX MAP
SCALE: 1 INCH = 600 FEET
JANUARY 17, 2011
DATE OF LATEST REVISION

GRAPHIC SCALE
0 300' 600' 1200'
MLS JOB NO. 4171.00

NORTH
INDEX

29 30 31 32 33 34

35 36 37 38 39

40 41 42 43 44

45 46 47 48

49 50 51 52

53 54

55 56

N

REFERENCE PLAN

LEGEND:

- INDUSTRIAL ZONE
- OFFICE ZONE
- COMMERCIAL ZONE
- WATERFRONT INDUSTRIAL ZONE
- MARINA ZONE
- RESIDENTIAL ZONE
- HISTORIC DISTRICT
- GREAT BAY WILDLIFE REFUGE
- PEASE DEVELOPMENT AUTHORITY
- PRIME WETLANDS

MERIDIAN LAND SERVICES, INC.
31 OLD NASHUA ROAD, AMHERST, N.H. 03110
TEL. 603-673-3441 FAX 603-673-1884
ENGINEERS - LAND SURVEYORS - SCIENTISTS - LAND PLANNERS

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NEWINGTON, N.H.

TAX MAP
SCALE: 1 INCH = 600 FEET
JANUARY 17, 2011
DATE OF LATEST REVISION

GRAPHIC SCALE
0 300' 600' 1200'
MLS JOB NO. 4171.00

SOUTH INDEX

N

REFERENCE PLAN

GREAT BAY

WELSH COVE

22-13
"MYERS, NORMAN W. FAMILY TRUST"
12.40

S 1150

S 500

S 690+/-

22-3
"SMITH, JEFFERY W."
2.66

255

22-2
"HEBERT, DENNIS & HYLAND-HEBERT, ANN"
1.83

180

22-1
"DAVIS, PETER K. & LINDA B."
1.84

311

542

22-4
"ROSS, DOUGLAS A. & ANGELITA R."
2.30

210

566

22-5
"BESWICK, PAUL R. 2008 REV. TRUST"
3.33

1640+/-

GUNDALOW LANDING CIRCLE

22-9
"VIETAS, LAWRENCE W. & SUZANNE"
2.69

GUNDALOW LANDING CIRCLE

22-11
"HAMELIN, RICHARD P."
1.84

22-12
"RAYMOND, ROBERT P. & PERNAA, MARY JANE"
1.84

376

369

208

264

100

476.80'

22-6
HILDE COCHRANE REVOCABLE TRUST
2.22

340

399.87'

412.00'

GUNDALOW LANDING

81.65'

38.90'

BRICKYARD WAY

54.5'

50.68'

22-10
"HYLAND, HELEN E. TRUST"
1.88

205.38'

22-7A
"PHILBRICK, SUSAN REV. TRUST"

163.84'

116.37'

22-7A
0.70

192.44'

377.70

163.84'

22-7
"PHILBRICK, SUSAN REV. TRUST"
2.10

TIE
158.87'

228.22'

183.63'

200.00'

43.82'

230±

19'±

TIE
69.83'

TIE
152.63'

22-8
"HASKELL, CALVIN B. & MARY JO."
2.80

85'±

110'±

47.20'

227.94'

209.78'

278.92'

1825+/-

10'±

23-16

LITTLE ROAD

23-31

495.11

532.89

23-32

1075+/-

200.0

40.0

60.73

78.41

316.0

FRESH

23-33

625.61

LEGEND	LOT NO. 12-12 DIMENSIONS 123.45'
TOWN LINE	
ROW - PUBLIC	
ROW - PRIVATE	
ROW - PAPER	
LOTLINE	
EASEMENT	
BROOKS/STREAMS	
LAKES/RIVERS	
FORMER LOT LINE	
PDA / SNDY.	
BUILDINGS/DRIVES	
WETLANDS / WATER BODIES	
PRIME WETLAND	PW-1

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ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

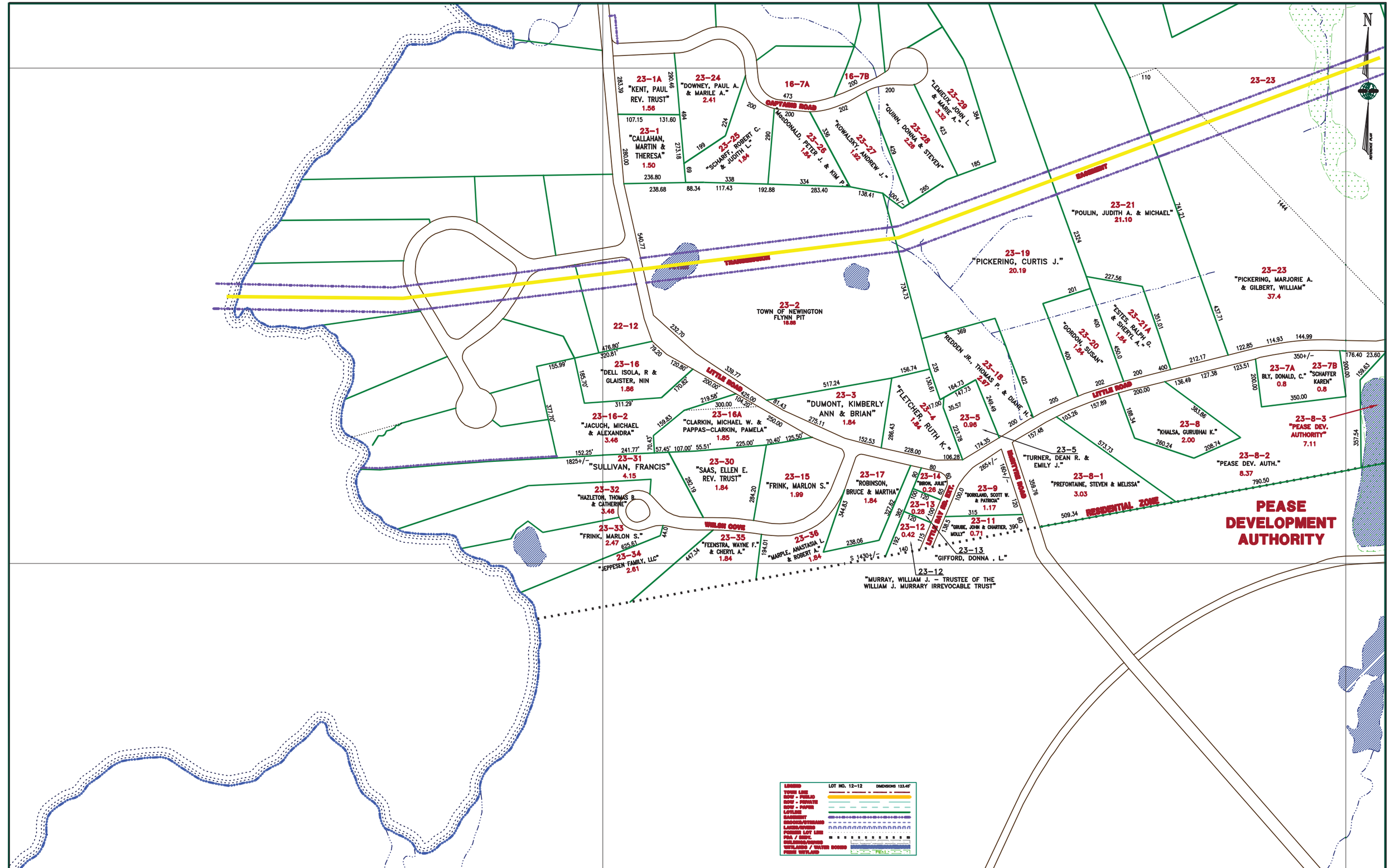
NEWINGTON, N.H.

TAX MAP SCALE
24"x36" PLOT - 1"=100'
11"x17" PLOT - 1"=220'+/-
JANUARY 17, 2011
DATE OF LATEST REVISION

GRAPHIC SCALE
0 50' 100' 200'
MLS JOB NO. 4171.00

	15	16
	23	
	29	30

22



MERIDIAN LAND SERVICES, INC.
31 OLD NASHUA ROAD, AMHERST, N.H. 03110
TEL. 603-673-1441 FAX 603-672-1564
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

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NEWINGTON, N.H.

TAX MAP SCALE
24"x36" PLOT - 1"=100'
11"x17" PLOT - 1"=220'+/-
JANUARY 17, 2011
DATE OF LATEST REVISION

GRAPHIC SCALE
0 50' 100' 200'
MLS JOB NO. 4171.00

15	16	17
22		24
29	30	31

23

9-5
15-1
15-12
16-1
"LAMSON, MARGARET F."
2.52
16-11
"SPINNEY, ROBERT & PAUL""
8
16-2
"HOLGATE, EDWARD & GINA"
1.00
16-3
1.00
16-3
BROWN, DARYL M. & SHARON C.
16-4
"LOEWY, JEFFREY S. & LINDA A."
2.35
16-4A
"DELISLE, DONALD P. & LEVESQUE, DELORES"
1.83
16-5
"ANDERSON LIVING TRUST"
2.40
16-6
"LEIGHTON, MARTIN J. & LEIGHTON, CANDICE CANTALUPO"
2.40
16-7
"FERLAND, EVELYN, TRUSTEE"
7.23
16-7-1
"LUCAS, GLEN I., JR. & PATRICIA A."
2.58
16-7B
"BLACK, WILLIAM A. & SHARON L."
16-7B
2.15
16-7C
"EVERSMAN, STUART & VICTORIA"
2.08
16-7A
"FERLAND LIVING TRUST"
1.84
16-8
"HISLOP, DAVID & MARGARET"
43.42
16-8A
"HISLOP, ALBERT S. & JANE"
5.07
10-23A
10-25 R.O.W.
10-14
23-1A
23-24
23-21
23-19
23-29
23-6
17-15
17-15A
LITTLE BAY ROAD
CAPTAINS LANDING ROAD
KNIGHT'S BROOK
N
REFERENCE PLAN

LEGEND — LOT NO. 12-12 — DIMENSIONS 123.45'
TOWN LINE
ROW - PUBLIC
ROW - PRIVATE
ROW - PAPER
LOTLINE
EASEMENT
BROOKS/STREAMS
LAKES/RIVERS
FORMER LOT LINE
PDA / SNDY.
BUILDINGS/DRIVES
WETLANDS / WATER BODIES
PRIME WETLAND
PW-1

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MLS JOB NO. 4171.00

9	10	11
15		17
22	23	24

16

N

REFERENCE PLAN

17–8A

18–3A

18–3B

24–9
"BUTTERWORTH, JAMES & CHARLOTTE"
3.01

24–1
"O'BRIEN, ALEXANDER C."
12.29

23–6

24–8
PICKERING, LULU & WILLIAM"
2.0

LITTLE BAY RD

NEWMARKET

HALL

24–2
"HARVEY, PAUL & CAROLYN, CAROLYN HARVEY"
10.00

24–3
NEWINGTON TOWN CHURCH – EXEMPT
4.50

CEMETARY

24–4
"CROSS, CHRISTOPHER A. & CYNTHIA B."
6.09

24–11
TOWN OF NEWINGTON – ET.AL
4.46

24–12
TOWN OF NEWINGTON – ET.AL
15.95

24–10
TOWN OF NEWINGTON
1.41

24–13
TOWN OF NEWINGTON – ET.AL
52.72

23–23

23–8–3

24–6
TOWN OF NEWINGTON – ET.AL
29.05

ROAD

RESIDENTIAL ZONE

RESIDENTIAL ZONE

DRIVE

ARBORETUM

ARBORETUM DRIVE

PEASE DEVELOPMENT AUTHORITY

LEGEND — LOT NO. 12–12 — DIMENSIONS 123.45'

TOWN LINE
ROW - PUBLIC
ROW - PRIVATE
ROW - PAPER
LOTLINE
EASEMENT
BROOKS/STREAMS
LAKES/RIVERS
FORMER LOT LINE
PDA / BNDY.
BUILDINGS/DRIVES
WETLANDS / WATER BODIES
PRIME WETLAND

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0 50' 100' 200'
MLS JOB NO. 4171.00

16	17	18
23		25
30	31	32

24

17-13
"REINHOLD, FRANK E. & KATHLEEN"

17-14
"COLE, JASON & GERACI-COLE, HEATHER"
2.00

17-13
0.70

17-12
"GOINS, WILBUR REV. TRUST"
1.78

17-11
"WATSON, DOROTHY M."
10.78

17-11A
"WATSON, DAVID B."
0.00

17-11-2
"MATHES, MICHAEL C."
3.96

11-12

FOX POINT RD

18-10

17-1
"MITCHELL, JOSEPH R. & RUTH"
0.52

17-3
"TOWN OF NEWINGTON"
8.4

17-2
"GREGG, DAVID C."
1.80

18-8A

17-10A
"MILLS, THOMAS & MADELINE"
1.84

17-9B
"BUNTRAGER, KAREN C."
1.84

17-10
CWB & BLB REVOCABLE TRUST
1.92

17-9
"HOURIHAN, THOMAS F. & JANE H."
2.76

OLD POST ROAD

HILL ROAD

17-15
"RIPLEY, MARGARET W. REV. TRUST"
12.98

17-15A
"BOYNTON, JEFFREY D. & JILL B."
7.38

17-4
"BEANE, PAUL J."
10.62

17-5
"WINN JR., PHILIP JOHN" 0.75

17-6
"SABINE, STEPHEN E. & BRENDA J."
2.00

17-7A
"BAGLEY, PAUL & SHERYL"
1.91

17-7
"BUSH, STEVEN J. & CAROL A."
3.34

17-7B
"LEE, JOHN F."
2.03

17-7C
"ABBOTT, CLIFFORD N."
1.92

17-7A-1
"BAGLEY, PAUL & & SHERYL" 0.57

HANNAH LANE

17-7F
"COOKE, RUSSELL J. & MARGARET C."
2.14

17-7D
"BLONIGEN, ROBERT P. & BRENDA"
1.90

17-7E
"WILSON-DALAL FAMILY TRUST"
2.10

17-9A
"HOURIHAN, THOMAS F. & JANE H."

17-8
"FRINK, JOHN ET AL"
30.22

17-8A
"FRINK FAMILY TRUST &"
"RYDER FAMILY REV. TRUST"
13.11

23-6

18-3B

24-3

18-3A

NEWBLE

N

REFERENCE PLAN

LEGEND	LOT NO. 12-12 DIMENSIONS 123.45'
TOWN LINE	
ROW - PUBLIC	
ROW - PRIVATE	
ROW - PAPER	
LOTLINE	
EASEMENT	
BROOKS/STREAMS	
LAKES/RIVERS	
FORMER LOT LINE	
PDA / BNDY.	
BUILDINGS/DRIVES	
WETLANDS / WATER BODIES	
PRIME WETLAND	PW-1

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10	11	12
16		18
23	24	25

17

11–12

18–9
"WONG, JIM H. & RUTH H."

18–10
"D'ALLESANDRO, PHILOMENA"
3.30

17–1

18–9
0.37

FOX POINT RD

18–8A
"FOX POINT NOMINEE TRUST"
2.00

18–7
"HOUSE, RAYMOND F. & MARY"

18–7
0.60

18–8
"COOLEY, RALPH & BARBARA"
4.80

17–4

17–7

18–3A
"WATSON, BREN & SANDRA"
20.12

18–3B
GSAMP TRUST
14.03

18–11
"SWEENEY, DAVID F. & WENDY LOU"
2.07

18–6
1.21

18–5
0.37

18–4
1.45

18–1
"LINK II, JAY M. & DEIRDRE L."
2.02

18–2
0.84

18–2
"PACKARD, BEVERLY"

18–13
TOWN OF NEWINGTON
1.08

18–4
"O'REILLY, JOHN J. & LUANNE"

18–5
"MALDINI, RENATO J."

18–6
"FRANK FAMILY REV. TRUST OF 2007"

12–12

12–13

PICKERING BROOK

PICKERING BROOK

RESIDENTIAL ZONE

RESIDENTIAL ZONE

PEASE DEVELOPMENT AUTHORITY

PEASE DEVELOPMENT AUTHORITY

ARBORETUM DRIVE

630 260.88 278.67 49.1 65.77 58.56 75.67 172.0 268 411.31 159.08 S 160 155.23 311 255.71 147.84 197 160 100 150 325 338 350 150 138 160 100 250 209.03 269.79 200.00 S 295 320 233.21 233.21 158.43 56.4 65 448 440 345

N

REFERENCE PLAN

LEGEND — LOT NO. 12–12 — DIMENSIONS 123.45'

- TOWN LINE
- ROW - PUBLIC
- ROW - PRIVATE
- ROW - PAPER
- LOTLINE
- EASEMENT
- BROOKS/STREAMS
- LAKES/RIVERS
- FORMER LOT LINE
- PDA / BNDY.
- BUILDINGS/DRIVES
- WETLANDS / WATER BODIES
- PRIME WETLAND

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MLS JOB NO. 4171.00

11	12	13
17		19
24	25	26

18

6-1
S 615
247.43
153.05
324.50
338.07
12-4
"YOUNG, ROBERT G. & LUCY"
9.88
7-2
150.53
100.33
208.22
12-17
"GORSEY, RICHARD E." REV. TRUST"
2.83
7-24
244.27
7-20
291.6
91.6
200
200
200
12-15
"NIMBLE HILL OFFICE SUITES, LLC"
0.98
S 270
8-1
S 310
50
SPAULDING TURNPIKE
UNITED
12-1
"TOOMIRE, BARBARA REV. TRUST"
1.60
375
260
55.06
100
S 108
S 90
12-16
SHANDON INC. (NESLAB)
13.9
229.23
131.21
130.76
342.99
50.0
212.23
78.79
44.22
115.00
324.22
12-2
"RUSSELL, SUZZANNE M."
1.66
12-3
"DAIGLE, CRAIG & SUSAN H."
0.64
280.00
140.00
122.47
200.39
12-6
"YOUNG, ROBERT G."
6.85
435.85
268.85
167.00
12-5
"YOUNG, ROBERT G."
0.78
236.92
100.00
29.74
135.84
100.10
200.00'
201.04'
206.77'
392.94
392.33
217.58'
217.80'
209.25
199.96'
465.51'
514.87
11-4
120.0
66.06
120.25
642.61
12-8
"MAZEAU, MICHAEL J. & W. JANE"
1.19
327.65
343.77
PRIVATE ROW
325.0
26.12
123.51
99
135
260.1
12-11A
"LYONS, CYNTHIA A."
1.84
12-11
"YOUNG, ROBERT G."
1.97
STATES
EASEMENT
S 1055
12-9
"YOUNG JR., ROBERT G."
2.40
COLEMAN DRIVE
NIMBLE HILL ROAD
275.0
350.0
S 280
11-6
127.38
280.00
185.00
100.00
22.89
12-10
"MOSHER, EDNA G. REV. TRUST"
8.36
12-10B
"MOSHER, EDNA G. REV. TRUST"
10.24
218
S 150
PEASE DEVELOPMENT AUTHORITY
12-10A
"MANESS, NATHANIEL & AMY L."
2.80
257.79
818.6
1113.8
625.3
503.4
RESIDENTIAL ZONE
2255+/-
212
180
358.81
388.8
213.99
47.37
40.6
81.2
12-12
"FRIZZELL, C. KEITH & SARA F."
37.00
EASEMENT
TRANSMISSION
PICKERING BROOK
1220
507
12-13
G-6 ENTERPRISES LLC
15.75
448
326.0
11-12
500.1
N
REFERENCE PLAN

LEGEND	LOT NO. 12-12	DIMENSIONS 123.45'
TOWN LINE		
ROW - PUBLIC		
ROW - PRIVATE		
ROW - PAPER		
LOTLINE		
EASEMENT		
BROOKS/STREAMS		
LAKES/RIVERS		
FORMER LOT LINE		
PDA / SNDY.		
BUILDINGS/DRIVES		
WETLANDS / WATER BODIES		
PRIME WETLAND	PW-1	

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GRAPHIC SCALE
0 50' 100' 200'
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6	7	8
11		13
17	18	19

12

12–13
19–5
"BLUE JOB MOUNTAIN ENTERPRISES"
0.20
19–4
"GILMAN, KEVIN"
0.32
19–3
DISABLED AMERICAN VETERANS
0.59
19–4
SPAULDING
RIVER ROAD
19–2
PSNH
0.98
SEWER EASEMENT
13–7
13–7A
PSNH
1.73
19–6
PATTERSON LANE LLC
2.94
40' ROW
20' ROW
13–11
13–10
20–12
19–10
"NEWINGTON ENERGY"
24.38
P/O 19–10
SEWER EASEMENT
PATTERSON LANE
SHATTUCK WAY
19–8
NEWINGTON INDUSTRIAL ASSOC.
1.96
19–9
NORTHEAST MEDICAL PROPERTIES, INC.
8.22
160.47' FUEL LINE EASEMENT
WOODBURY AVENUE
19–1A
DOW REALTY TRUST
0.58
19–12
NORTHEAST MEDICAL PROPERTIES, INC.
4.08
19–12A
HAUCH STORAGE
2.19
19–15
"BALL, NATALIE J."
0.70
19–14
MARELD COMPANY
7.323
19–16
"EMERY, JOHN"
0.53
19–17
"MOORE, JANE N."
0.14
19–18
"GUY, ROBERT D."
0.19
19–1B
WAL–MART (Building Only)"
19–1
"HYDER"
LAND ONLY
12.77
19–2A
"HORIZON TRUST OF NH"
4.33
19–20
NEWINGTON REALTY COMPANY (Happy Wheels)
3.70
19–21
"NAVELSKI, JOSEPH"
0.01
19–19
TOWN OF NEWINGTON – MEDIAN
0.60
OLD DOVER ROAD
AVERY RD
19–22
CITY OF PORTSMOUTH
2.82
PEASE DEVELOPMENT AUTHORITY
TURNPIKE
COMMERCIAL ZONE
1080.00
LOOMER'S
ARBORETUM DRIVE
REFERENCE PLAN

LEGEND — LOT NO. 12–12 — DIMENSIONS 123.45'
TOWN LINE
ROW - PUBLIC
ROW - PRIVATE
ROW - PAPER
LOTLINE
EASEMENT
BROOKS/STREAMS
LAKES/RIVERS
FORMER LOT LINE
PDA / SNDY.
BUILDINGS/DRIVES
WETLANDS / WATER BODIES
PRIME WETLAND

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12	13	14
18		20
25	26	27

19

N

REFERENCE PLAN

PEASE DEVELOPMENT AUTHORITY

LEGEND	LOT NO. 12–12	DIMENSIONS 123.45'
TOWN LINE		
ROW - PUBLIC		
ROW - PRIVATE		
ROW - PAPER		
LOTLINE		
EASEMENT		
BROOKS/STREAMS		
LAKES/RIVERS		
FORMER LOT LINE		
PDA / BNDY.		
BUILDINGS/DRIVES		
WETLANDS / WATER BODIES		
PRIME WETLAND	PW-1	

19–1

19–20

26–5
"TEXAS ROADHOUSE HOLDINGS"
3.89

26–6
"BEALS, JULIA"
0.63

26–1
HOLY TRINITY LUTHERAN CHURCH
3.31

26–2
"MMC FOX RUN, LLC"
4.82

26–3
SEARS ROEBUCK & CO.
12.91

26–4
J.C. PENNY CO. INC.
8.00

FOX RUN ROAD

SPAULDING DRIVE

ARBORETUM TURNPIKE

COMMERCIAL ZONE

397.8 330.3 373.0 200 35.60 233.06 236.56 427.85 215.10 259.28 353.30 68.18' 51.98' 140.23' 191.08' 32.61 49.53 189.15 51.93 327.29 400 315.89 S 285 406.03 324.29 284.69 119.58 36.06 306.80 86.19 267.41 401.00 500.64 127.00 40.50 94.21 1471.58 766.63 732.84 503.14 447.41 373.42 356.80 50.00

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18	19	20
25		27
32	33	34

26

NASHUA AVENUE

ARBORETUM DRIVE

COMMERCIAL ZONE

356.80

117.80

306.77

5.4

679.09

PEASE
DEVELOPMENT
AUTHORITY

PDA

N

REFERENCE PLAN

LEGEND	LOT NO. 12–12	DIMENSIONS 123.45'
TOWN LINE		
ROW - PUBLIC		
ROW - PRIVATE		
ROW - PAPER		
LOTLINE		
EASEMENT		
BROOKS/STREAMS		
LAKES/RIVERS		
FORMER LOT LINE		
PDA / INDY.		
BUILDINGS/DRIVES		
WETLANDS / WATER BODIES		
PRIME WETLAND	PW-1	

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25	26	27
32		34
38	39	

33

34-3
"SBAF RUNNING FOX, INC."
58.26

34-3-1
"TOYS R US"
(BLDG ONLY)

34-3-2
"SBAF RUNNING FOX, INC."
2.76

34-2
"CUMBERLAND FARMS"

34-1
9-11 MEAR ROADS REALTY LLC (Tweeter)

34-1
2.06

34-2
1.04

28-1

3.134

P.S.N.H. EASEMENT

ACCESS EASEMENT

WOODBURY AVE

SPAULDING TURNPIKE

GOSLING ROAD

PORTSMOUTH

500.52 494.04 100.06 100.09 60.73 25 199.93 100.07 98.88 112.68 124.26 123.71 142.15 138.24 112.56 114.57

679.09' 19.00' 222-10' 206.08 53.59' 314.89' 53.14' 20.04' 189.97' 11.24' 49.78' 61.02 39.26 0.95' 101.13' 100.13' 224.64' 60.86 221.51 359.13 81.6 49.28 197.24' 36.47' 55.69' 42.75' 481.79 513.49' 129.67' 95.42' 40.00' 17.0 54.49 175.51 184.24 178.75 230.16 200.00 120.41 477.74 199.77 330.00 100.00 540.51 425.53 114.98' 360.15

N

REFERENCE PLAN

LEGEND — LOT NO. 12-12 — DIMENSIONS 123.45'

TOWN LINE
ROW - PUBLIC
ROW - PRIVATE
ROW - PAPER
LOTLINE
EASEMENT
BROOKS/STREAMS
LAKES/RIVERS
FORMER LOT LINE
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TAX MAP SCALE
24"x36" PLOT - 1"=100'
11"x17" PLOT - 1"=220'+/-
JANUARY 17, 2011
DATE OF LATEST REVISION

GRAPHIC SCALE
0 50' 100' 200'
MLS JOB NO. 4171.00

26	27	28
33		
39		

34

27-1

27-1-D
TYCO
ELECTRONICS
8.41

27-1
"TYCO"
48.95

27-1-3
"SHATTUCK WAY
ASSOC., LLC"
5.13

27-1-E
"DEROCHEMONT
HOUSE, LLC"
1.63

27-8
"FOX RUN
JOINT VENTURE"
1.12

20-4C
"TYCO"
7.84

27-1-A2
"UNDERDOG REALTY, LLC"
3.71

27-1-A1
"MINDDRIFT, LLC"
2.94

27-22
"PISCATAQUA DRIVE, LLC"
4.92

27-9
"MACY'S EAST, INC."
7.33

27-10
MAY DEPARTMENT STORES CO.
7.99

28-4

27-11
FOX RUN JOINT VENTURE
52.00

27-11
FOX RUN JOINT VENTURE
52.00

27-2
GREAT BAY SERVICES, INC.
7.72

27-20
HRE (Land Only)
3.10

27-4
TOWN OF NEWINGTON WWTF
0.85

27-3
"BANK OF NH
(BANKNORTH)"
1.45

27-16
GMRI
5.05

27-18
HRE PROPERTIES
5.88

27-16-1
"TOWN OF NEWINGTON"
CEMETERY
1,984 S.F.

27-12
"REALTY INCOME CORP."
3.08

27-5
"DILORENZO
REAL ESTATE, LLC"
4.54

27-17
HRE PROPERTIES
5.30

27-5A
"DILORENZO R.E."
2.05

34-3

35-4

FOX RUN RD
SEWER
EASEMENT
SHATTUCK WAY
PISCATAQUA DR
FOX RUN MALL
BROOK
FOX RUN MALL ENT.
WOODBURY AVENUE
PAUL
WEST PARK DRIVE
EASEMENT
SERVICE CO. OF N.H.
PUBLIC SERVICE
MALL CONNECTOR RD
25' SEWER EASEMENT
300' PSNH EASEMENT
SEWER
EASEMENT
REFERENCE PLAN

N

LEGEND
TOWN LINE
ROW - PUBLIC
ROW - PRIVATE
ROW - PAPER
LOTLINE
EASEMENT
BROOKS/STREAMS
LAKES/RIVERS
FORMER LOT LINE
PDA / BNDY.
BUILDINGS/DRIVES
WETLANDS / WATER BODIES
PRIME WETLAND
LOT NO. 12-12
DIMENSIONS 123.45'

MERIDIAN LAND SERVICES, INC.
31 OLD NASHUA ROAD, AMHERST, N.H. 03110
TEL. 603-673-1441 FAX 603-673-1564
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

NEWINGTON, N.H.

TAX MAP SCALE
24"x36" PLOT - 1"=100'
11"x17" PLOT - 1"=220'+/-
JANUARY 17, 2011
DATE OF LATEST REVISION

GRAPHIC SCALE
0 50' 100' 200'
MLS JOB NO. 4171.00

19	20	21
26		28
33	34	

27

PISCATAQUA RIVER

28–04

28–04

28–5
PSNH
16.77

28–6
PSNH
0.76

28–04
PSNH
53.43

28–2
GOSLING ROAD TRUST
3.00

28–1
"HALLETT TRUSTEE, RICHARD S."
1.22

27–5

34–1

674.64'
SEWER EASEMENT
195.00
115.44
1360+/–
221.56
BOSTON & MAINE RAILROAD
183.37
116.48
EASEMENT
302.35
199.98
214.95
783.91
S 610
466
S 230
822.84
39.88
ROAD
1017.01
883.31
GOSLING ROAD
PORTSMOUTH
170.54
282.62
SEWER
674.53
649.86
24.67
138.23
648.77
417.03
PSNH EASEMENT
EASEMENT
45.76
221.21'
266.31
200
319.29
WOODBURY AVENUE

N
REFERENCE PLAN

LEGEND	LOT NO. 12–12 DIMENSIONS 123.45'
TOWN LINE	
ROW - PUBLIC	
ROW - PRIVATE	
ROW - PAPER	
LOTLINE	
EASEMENT	
BROOKS/STREAMS	
LAKES/RIVERS	
FORMER LOT LINE	
PDA / BNDY.	
BUILDINGS/DRIVES	
WETLANDS / WATER BODIES	
PRIME WETLAND	PW1

MERIDIAN LAND SERVICES, INC.
31 OLD NASHUA ROAD, AMHERST, N.H. 03110
TEL. 603-672-1441 FAX 603-672-1564
ENGINEERS • LAND SURVEYORS • SCIENTISTS • LAND PLANNERS

THIS DOCUMENT HAS BEEN PREPARED TO SHOW APPROXIMATE LOT LOCATION ONLY. INFORMATION SHOWN IS NOT TO BE USED FOR DEED DESCRIPTIONS.

NEWINGTON, N.H.

TAX MAP SCALE
24"x36" PLOT – 1"=100'
11"x17" PLOT – 1"=220'+/–
JANUARY 17, 2011
DATE OF LATEST REVISION

GRAPHIC SCALE
0 50' 100' 200'
MLS JOB NO. 4171.00

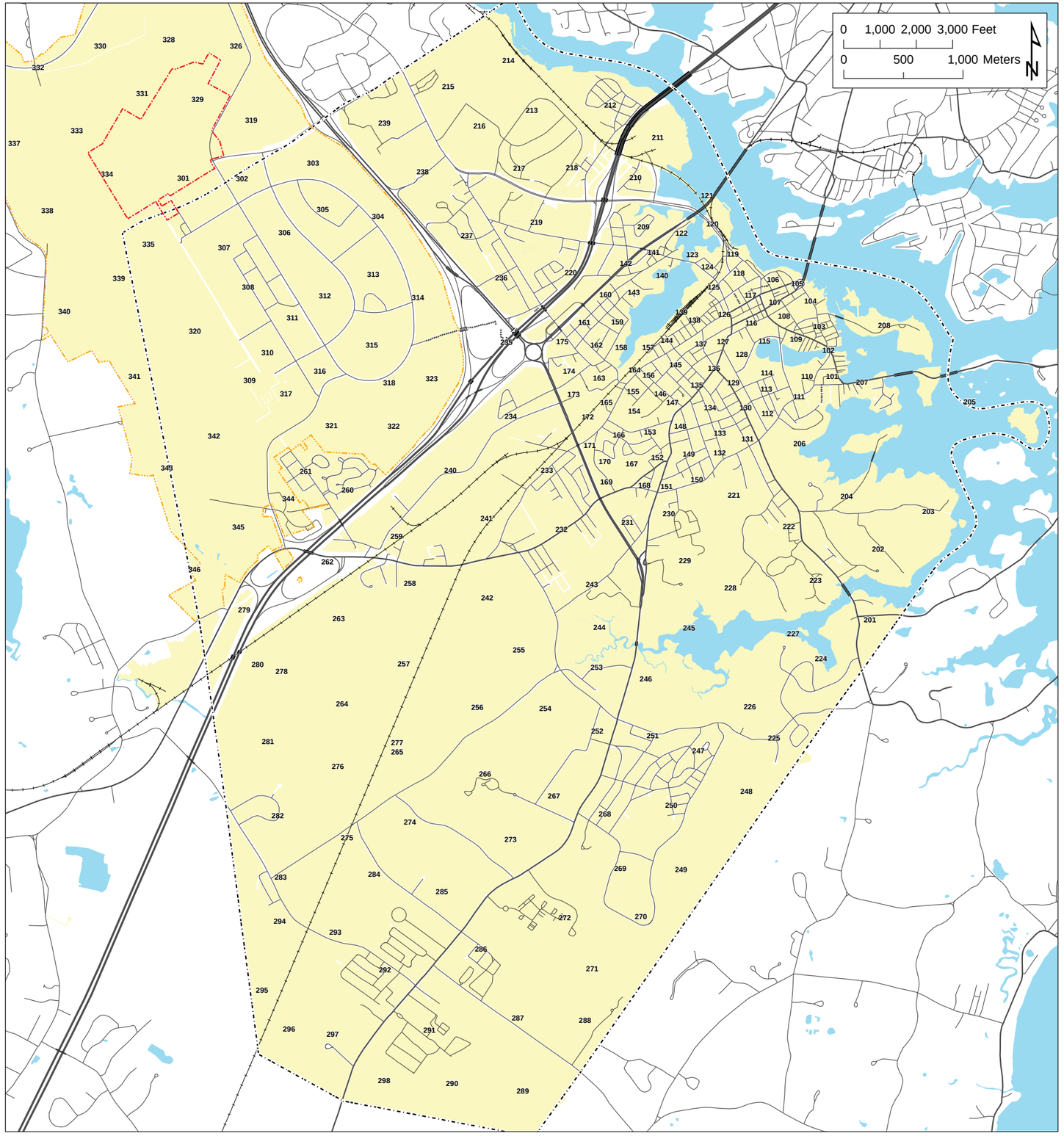
20	21		28
27			
34			

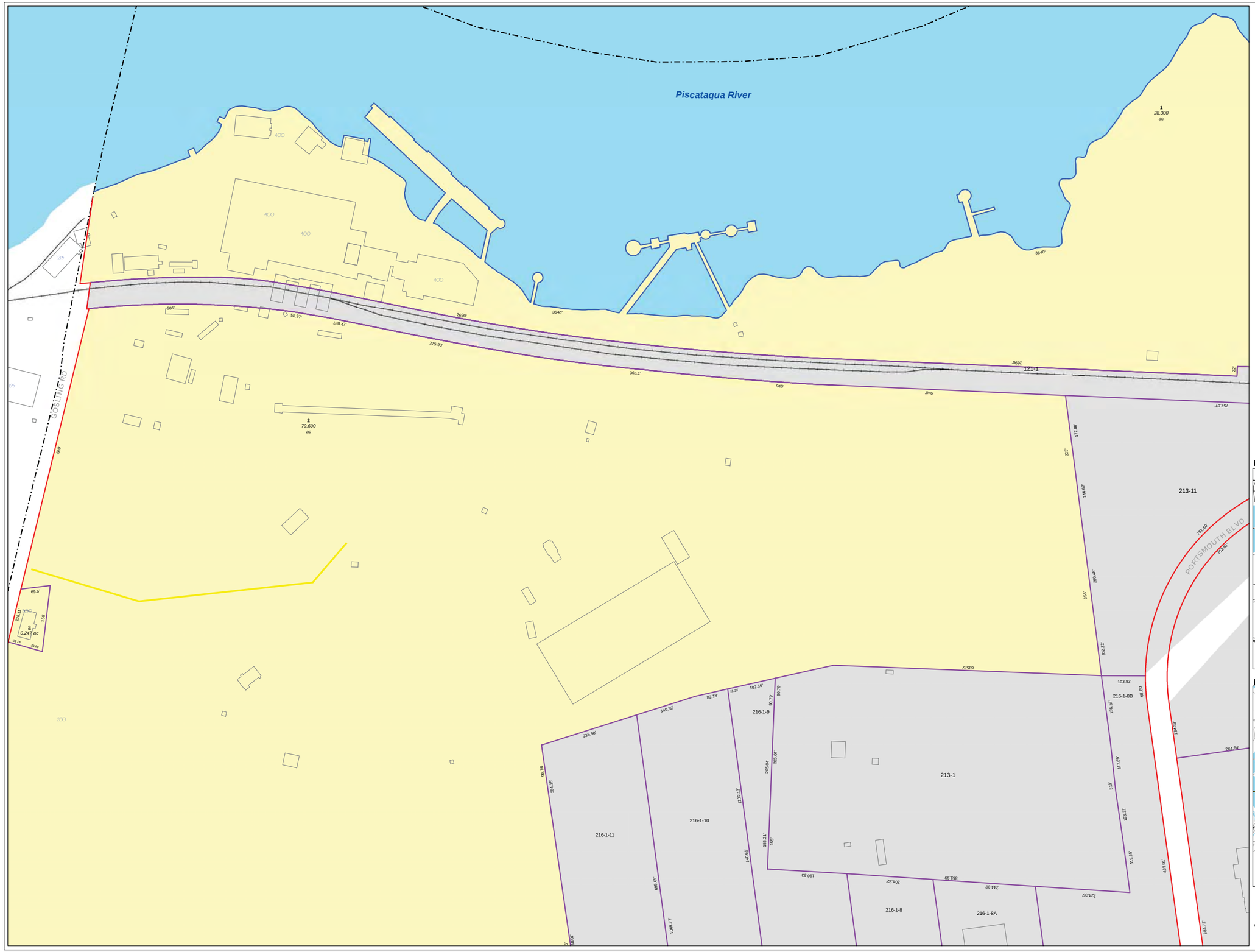
City of Portsmouth
2014 Rural Tax Maps

Maps 201-298

Tax Map Legend

7-5A	Lot or Lot-Unit Number
2.56 ac	Parcel Area in Acres
25	Address Number
233-137	Parcel Number from a Neighboring Map
68'	Parcel Line Dimension
SIMS AVE	Street Name
Piscataqua River	Water Body
	Cemetery
	Parcel Assigned to the Current Map
	Parcel from Another Map (please refer to the appropriate map)
	Water
	Parcel in Current Use
	Line Between Parcels
	Line Between Parcel and Right of Way
	Line Between Parcel and Water
	City Line
	New Hampshire Air National Guard (NHANG) Boundary
	Pease International Tradeport Boundary
	Structure (2006 data)
	Swimming Pool (2006 data)
	Railroad Track





Partial Legend

See the cover sheet for the complete legend.

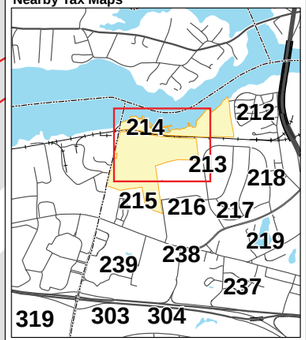
7-5A	Lot or lot-unit number
2.56 ac	Parcel area in acres (ac) or square feet (sf)
25	Address number
233-137	Parcel number from a neighboring map
68'	Parcel line dimension
SIMS AVE	Street name
	Parcel/Parcel boundary
	Parcel/ROW boundary
	Water boundary
	Structure (1994 data)
	Parcel covered by this map
	Parcel from a neighboring map (see other map for current status)

0 50 100 200 300 Feet

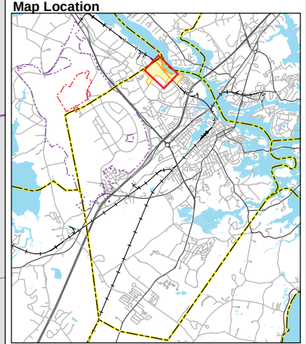
0 20 40 80 Meters

This map is for assessment purposes only. It is not intended for legal description or conveyance.
Parcels are mapped as of April 1.
Building footprints are 2006 data and may not represent current structures.
Streets appearing on this map may be paper (unbuilt) streets.
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.

Nearby Tax Maps



Map Location



Portsmouth, New Hampshire
2014

Tax Map 214

14 Abutter Notification (Env-Wt 101.03, Env-Wt 501.01(c), 501.02(a)(1)& 505.01(f))

Per, Env-Wt 501.01(c) abutter notification is not required for projects in utility ROWs; therefore abutter notification has not been completed for the portions of the Project located in existing and/or proposed utility ROW areas.

It should be noted that the Project has conducted and will continue to conduct pro-active outreach actions throughout Project permitting and construction, and public hearings will take place in accordance with NH SEC rules.

15 Permission for Work within 20 Feet (Env-Wt 304.04)

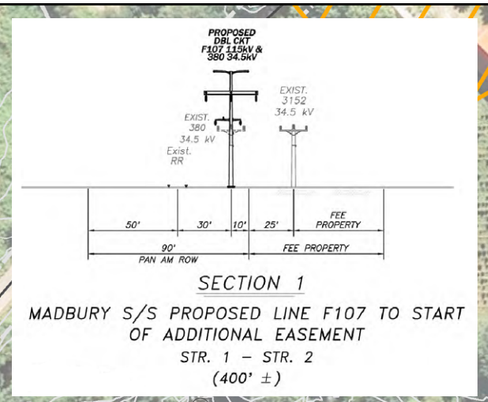
Per review of regulations and discussion with NHDES staff, this notification is not required. Little Bay is the only waterbody in the Project with in-water work, and there are no permanent structures in Little Bay to which the 20-foot setback from an imaginary extension of the property line would apply.

Extensive outreach efforts to all abutters and interested parties have occurred or are on-going as a part of the NH SEC process.

16 Plans (Env-Wt 501.02, Chapter Env-Wt 900)

Detailed plans depicting existing conditions and proposed impacts are included on the following Environmental Maps.

Wetland ID	Impact Type	Area (Sq. Ft.)
MW1 (PSS1)	Temporary	321
MW2 (PEM1/PSS1)	Temporary	28940
MW2 (PEM1/PSS1)	Permanent (Str. F107-1)	113
MW2 (PEM1/PSS1)	Permanent (Str. F107-2)	66
MW2 (PEM1/PSS1)	Permanent (Str. F107-3)	20

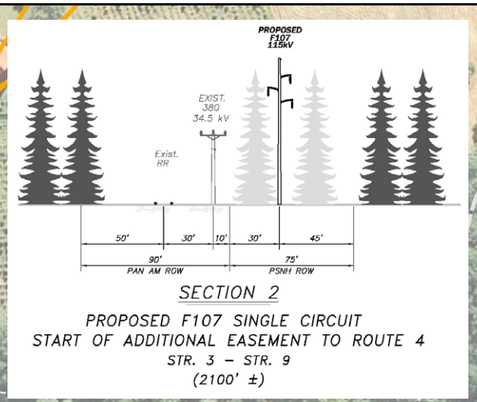


SECTION 1

MADBURY S/S PROPOSED LINE F107 TO START OF ADDITIONAL EASEMENT

STR. 1 – STR. 2

(400' ±)

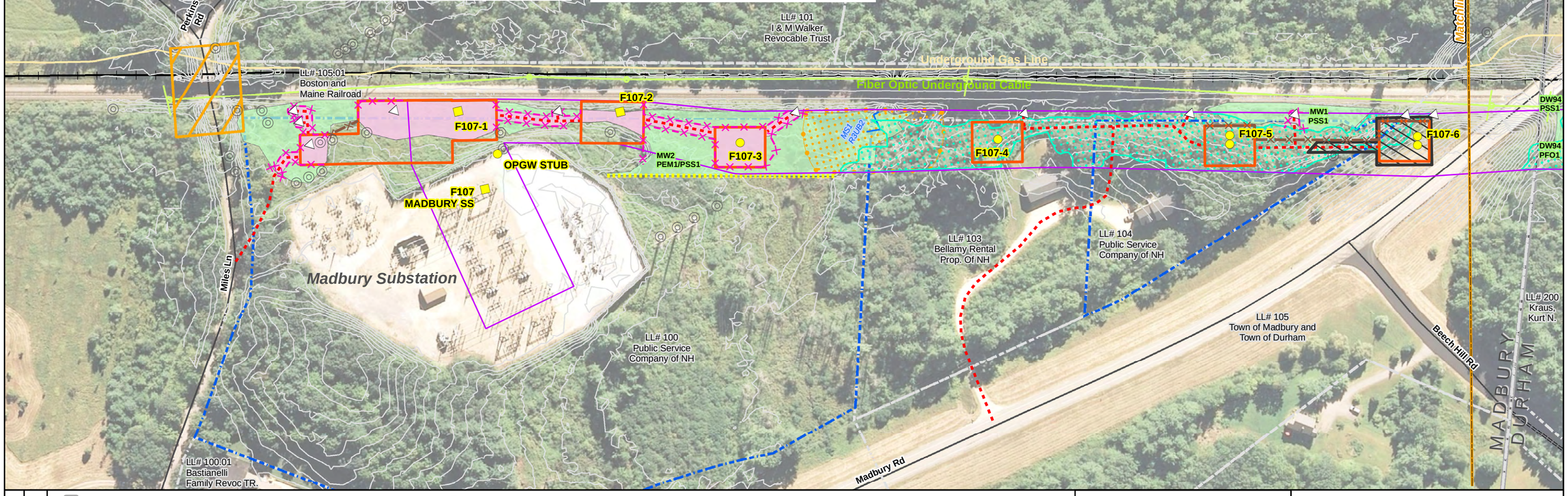


SECTION 2

PROPOSED F107 SINGLE CIRCUIT START OF ADDITIONAL EASEMENT TO ROUTE 4

STR. 3 – STR. 9

(2100' ±)



Date : 2/25/2016

Project No: 22860.003

Drawn By: athompson

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad

Roads
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

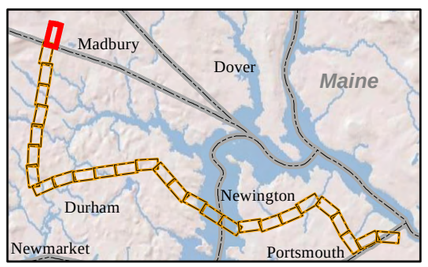
Structures
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



EVERSOURCE ENERGY

Seacoast Reliability Project

Environmental Maps

NORMANDEAU ASSOCIATES
Environmental Consultants

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516.mxd

LL# 201
State of New Hampshire

Madbury Rd

LL# 102
Houghton Family Revocable Trust

Main St

LL# 202
Forrest, David

LL# 203
Forrest, David

LL# 204.01
Town of Durham

LL# 205
Deturk, Mark S. & Mary J.

LL# 206
Henri J. Richard Rev Trust

LL# 207
Robert Calamari Trust

LL# 208
Skotko, Bradley & Smith, Heather

LL# 209
Luft, Karola

LL# 210
Vasile, Thomas & Kathleen K.

LL# 211
O'shea, Kevin M. & Leighsa A.

LL# 212
Giroux, David L. & Browne, Gretchen S.

LL# 213
Corvini, Marguerite

LL# 214
Peter M. Ejarque Revocable Trust, C/O Herman Ejarque

LL# 105.01
Boston and Maine Railroad

LL#201.08
Boston and Maine Railroad

Fiber Optic Underground Cable

LL# 204.02
Boston and Maine Railroad

DS92
R4SB4

DW91
PSS1

DW94
PSS1

DW94
PFO1

DW93
PSS1

DW93
PFO1

DW105
PFO1

F107-6

F107-7

F107-9

F107-10

F107-11

F107-12

F107-13

Matchime 2

LL# 105
Town of Madbury and Town of Durham

LL# 200
Kraus, Kurt N.

Piscataqua Rd

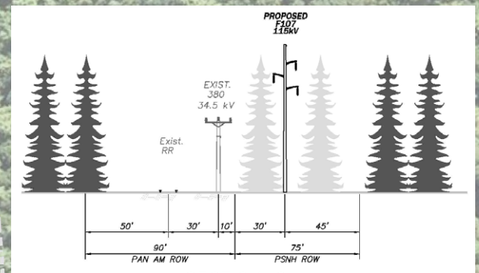
Underground Gas Line

LL# 204
University of New Hampshire Office of the President

MADBURY
DURHAM

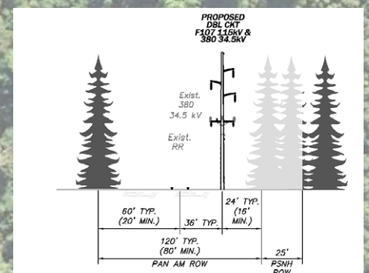
LL#

Beech Hill Rd



SECTION 2

PROPOSED F107 SINGLE CIRCUIT
START OF ADDITIONAL EASEMENT TO ROUTE 4
STR. 3 – STR. 9
(2100' ±)



SECTION 3

PROPOSED 380/F107 DOUBLE CIRCUIT
ROUTE 4 TO UNH PARKING LOT
STR. 10 – STR. 21
(4400' ±)

Wetland ID	Impact Type	Area (Sq. Ft.)
DW91 (PSS1)	Temporary	1240
DW93 (PFO1)	Temporary	1195
DW93 (PFO1)	Permanent (Str. F107-9)	3
DW94 (PSS1)	Temporary	1792
DW105 (PFO1)	Temporary	153
DW93 (PSS1)	Temporary	754
DW94 (PFO1)	Temporary	3169
DW94 (PFO1)	Permanent (Str. F107-7)	20
DS92 (R4SB4)	Temporary	42

Date : 2/25/2016

Project No: 22860.003

Drawn By: athompson

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad

Roads
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

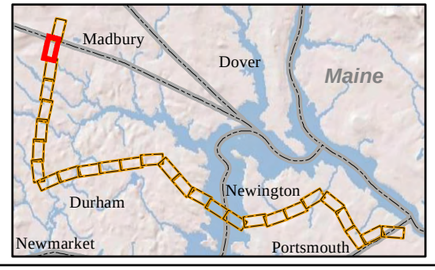
Structures
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



EVERSOURCE ENERGY

Seacoast Reliability Project

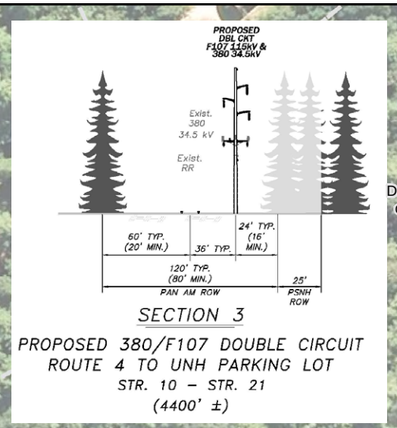
Environmental Maps

NORMANDEAU ASSOCIATES
Environmental Consultants

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST
1/28/16

Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516_Pg2.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW79 (PSS1)	Temporary	842
DW80 (PSS1)	Temporary	935
DW91 (PSS1)	Temporary	1240
DW77 (PSS1)	Temporary	1711
DS92 (R4SB4)	Temporary	42



LL# 214
Peter M. Ejarque
Revocable Trust,
C/O Herman
Ejarque

LL# 213
Corvini,
Marguerite

LL# 215
Day Lily Re LC,
c/o McClane,
Graf ET AL

LL# 215.13
Leach, David C.
& Catherine K.

LL# 215.14
Fairchild Drive
Association

LL# 216.04
Davis, Wendell
P. & Pamela K.

LL# 216 05
Hutchinson, Eric
R. & Ashley C.

LL# 216.06
Holt,
Mary S.

LL# 216.07
Dunphy, Philip
P. & Avery,
Robin J.

LL# 216.08
Charlotte A. R.
Welsh Rev Trust
& Carden N.
Welsh Rev Trust

LL# 217.01
Willoughby,
Darlene J.

LL# 216.02
Garofalo, Piero G.
& Dubois-Garofalo,
Karen S.

LL# 216.03
Pirie Family
Rev Trust, J & L

LL# 216.09
Lewis, Kathleen
S. & Stephen E.

LL# 216.01
Karl A. Van Asselt Liv Rev Trust
Houle Margaret G.

LL# 216
Fairchild Drive
Subdivision

LL# 217
University of New Hampshire
Office of the President

LL# 204.02
Boston and
Maine Railroad

LL# 204
University of New Hampshire
Office of the President

Fairchild Dr.
Rocky Ln
Davis Ave
Gables Way
Fiber Optic Underground Cable
DS92
R4SB4
DW91
PSS1
F107-14
F107-15
DW80
PSS1
F107-16
DW79
PSS1
DW78
PSS1
F107-17
F107-18
F107-19
DW77
PSS1
Matchline 3
Matchline 3

Town Boundary
Approximate Parcel Boundary
PSNH Fee Area
Project Corridor
Work Pad

Roads
Local
Not Maintained
Private
State
Railroad

Existing Str (Remain)
Existing Str (Removed/Modified)

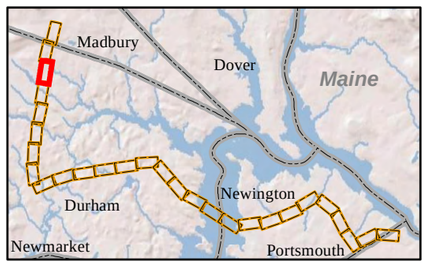
Structures
Direct Embed
Drilled Pier
Relocated Distribution
Access Roads
Underground Cable
Silt Curtain
Silt Fence, Hay Bale, Erosion Control Mix Berm
Straw Wattle

Wetland
Prime Wetland
Wetland Extends
Wetlands Impact
Stream Centerline
Stream Top of Bank
Temporary Culvert
Temporary Mat Bridge
Historical Sites

Designated River Buffer 250'
Conservation Lands
100 Year Floodplain
Steep Slope BMPs
Tree Clearing
Stream Buffer
2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



Service Layer Credits: Copyright:© 2014 Esri, granit.edu.

Date : 2/25/2016

Drawn By: athompson

Project No: 22860.003

EVERSOURCE ENERGY

Seacoast Reliability Project

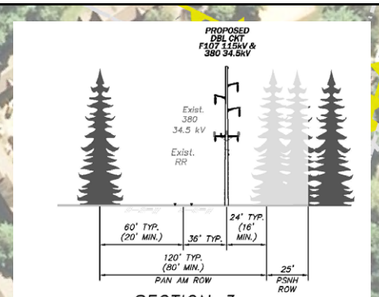
Environmental Maps

NORMANDEAU ASSOCIATES
Environmental Consultants

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST
1/28/16

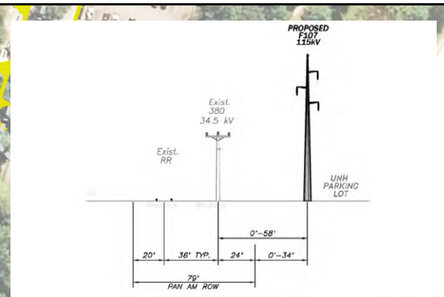
Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW76 (PSS1)	Temporary	4321
DW76 (PSS1)	Permanent (Str. F107-21)	20
DW77 (PSS1)	Temporary	1711



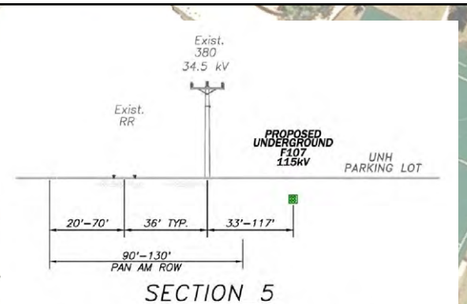
SECTION 3

PROPOSED 380/F107 DOUBLE CIRCUIT ROUTE 4 TO UNH PARKING LOT
STR. 10 – STR. 21
(4400' ±)



SECTION 4

PROPOSED F107 SINGLE CIRCUIT UNH PARKING LOT TO PROPOSED F107 UNDERGROUND TRANSITION
STR. 22 – STR. 23
(200' ±)



SECTION 5

PROPOSED F107 UNDERGROUND
UNH PARKING LOT
(2100' ±)

LL# 217
University of New Hampshire
Office of the President

LL# 218
Town of
Durham

LL# 219
Town of
Durham

LL# 220
University of New Hampshire
Office of the President

LL# 220.02
Boston and
Maine Railroad

LL# 221.01
Fairpoint C/O
University of
New Hampshire C/O
Fairpoint Comm
Inc Tax Dept

LL# 204.02
Boston and
Maine Railroad

LL# 204
University of New Hampshire
Office of the President

LL# 220.03
Town of
Durham

LL# 221
University of New Hampshire
Office of the President

LL#

DW77 PSS1
DW76 PSS1
F107-20
F107-21
F107-22
F107-23
DS75
R2UB1/2
Pipe Jacking

College Rd
Underground
Library Way
Matchime 3
Matchime 4
Colovos Rd
Mast Rd
Main St
North Dr
Gables Way
Mast Road Ext
Temporary D

Date : 2/25/2016
Project No: 22860.003
Drawn By: athompson

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad

Roads
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

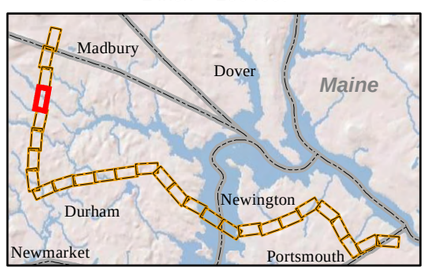
Structures
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



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Seacoast Reliability Project

Environmental Maps

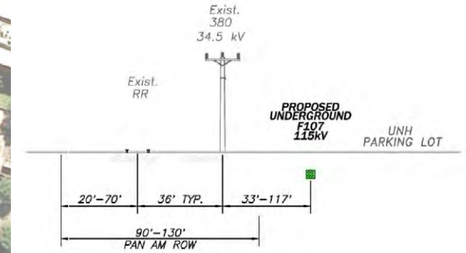
NORMANDEAU ASSOCIATES
Environmental Consultants

STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

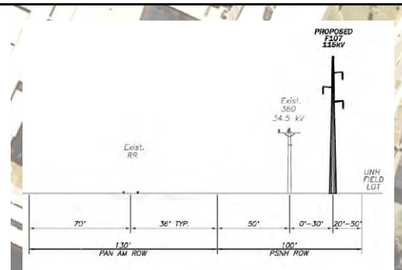
Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW65 (PEM)	Temporary	3917
DW65 (PEM)	Permanent (Str. F107-25)	7
DW67 (PEM)	Temporary	8972
DW67 (PEM)	Permanent (Str. F107-24)	14
DW69 (PEM)	Temporary	53
DW74 (PFO1/PSS1)	Temporary	1166
DS61 (R2UB3)	Temporary	33
DS74 (R2UB2)	Temporary	146



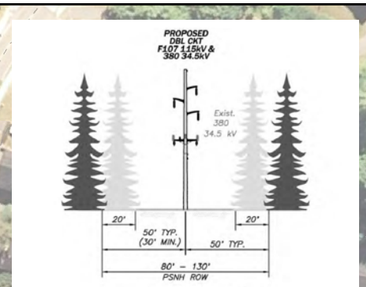
SECTION 5

PROPOSED F107 UNDERGROUND
UNH PARKING LOT
(2100' ±)



SECTION 6

PROPOSED F107 SINGLE CIRCUIT
PROPOSED F107 UNDERGROUND TRANSITION
TO PROPOSED 380/F107 DOUBLE CIRCUIT
STR. 24 – STR. 25
(300' ±)



SECTION 7

PROPOSED 380/F107 DOUBLE CIRCUIT
UNH TO RAILROAD CROSSING
STR. 26 – STR. 30
(2400' ±)

LL# 221 01
Fairpoint
C/O University of
New Hampshire C/O
Fairpoint Comm
Inc Tax Dept

LL# 220 02
Boston and
Maine Railroad

LL# 221
University of New Hampshire
Office of the President

Underground Gas Line

College Rd
Service Rd
Library Way
Demeritt Dr
Demeritt Cir
Williamson Ave
Williamson Ave
Water Works Rd
Colovos Rd
Colovos Rd
College Brook
Matchmine 4
Matchmine 5
Map 5A
Map

DW73 PSS1/PEM1
DW72 PSS1
DW71 PEM
DW69 PEM
DW74 PFO1/PSS1
DS74 R2UB2
F107-24
DW67 PEM
F107-25
DW65 PEM
F107-26
F107-27
F107-28
DS61B R2UB3
DS61 R2UB3
DW63 PSS/PEM
DS64A R2UB2
DW55 PSS
DS53 OHW R2UB2
DW59 PEM/PUB

Temporary Dewatering Area

Date : 2/25/2016
Project No: 22860.003
Drawn By: athompson

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad

Roads
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

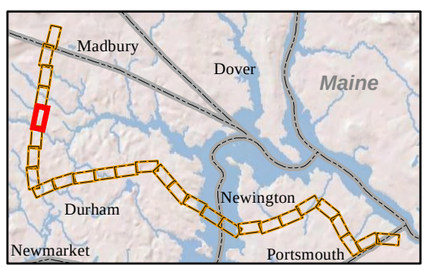
Structures
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



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Environmental Consultants

Seacoast Reliability Project

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STATE OF NEW HAMPSHIRE
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST
1/28/16

Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW49 (PEM/PSS)	Temporary	3172
DS61 (R2UB3)	Temporary	33
DS51 (R2UB2)	Temporary	20

LL# 221.01
Fairpoint C/O
University of
New Hampshire
C/O Fairpoint
Comm Inc Tax Dept

LL# 222
University of New Hampshire
Office of the President

Demeritt
Cir

F107-31

LL# 222 02
Boston and
Maine Railroad

F107-28

DS61B
R2UB3

DS61
R2UB3

DW63
PSS/PEM

DS61A
R2UB3

DW59
PEM/PUB

DW55
PSS

DS53 OHW
R2UB2

DS51
R2UB2

DW49
PEM/PSS

F107-29

F107-30

LL# 221
University of New Hampshire
Office of the President

Date : 2/25/2016

Project No: 22860.003

Drawn By: athompson

Roads
- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad
- Local
- Not Maintained
- Private
- State
- Railroad

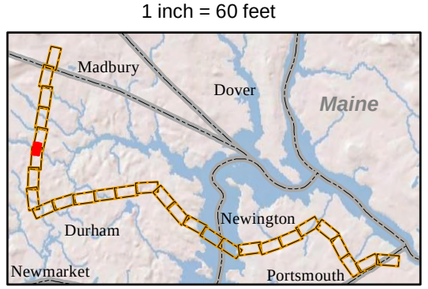
Structures
- Existing Str (Remain)
- Existing Str (Removed/Modified)
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 60 120 Feet

1 inch = 60 feet



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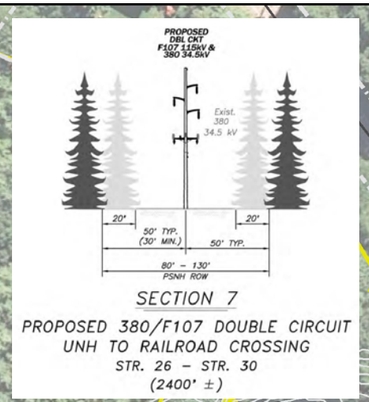
1/28/16

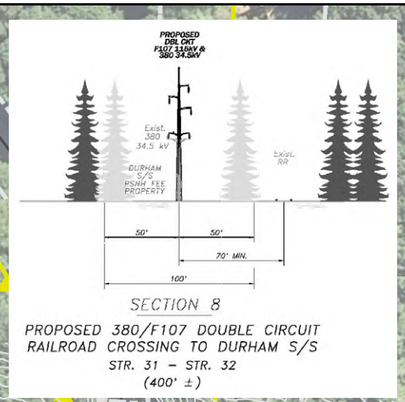
Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516_Pg5A.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW41 (PEM/PSS/PUB)	Temporary	18285
DW41 (PEM/PSS/PUB)	Permanent (Str. F107-36)	20
DW37 (PEM/PSS)	Temporary	1420
DW49 (PEM/PSS)	Temporary	3172
DS39 (R2UB2)	Temporary	207
DS51 (R2UB2)	Temporary	20



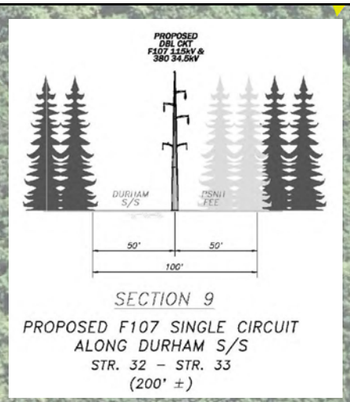
SECTION 7

PROPOSED 380/F107 DOUBLE CIRCUIT UNH TO RAILROAD CROSSING
STR. 26 - STR. 30
(2400' ±)



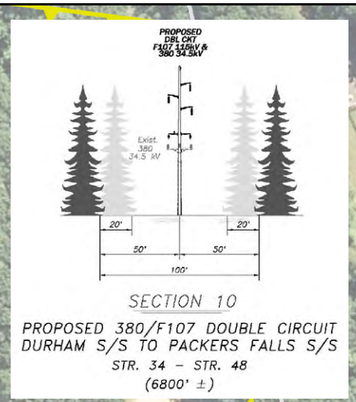
SECTION 8

PROPOSED 380/F107 DOUBLE CIRCUIT RAILROAD CROSSING TO DURHAM S/S
STR. 31 - STR. 32
(400' ±)



SECTION 9

PROPOSED F107 SINGLE CIRCUIT ALONG DURHAM S/S
STR. 32 - STR. 33
(200' ±)



SECTION 10

PROPOSED 380/F107 DOUBLE CIRCUIT DURHAM S/S TO PACKERS FALLS S/S
STR. 34 - STR. 48
(6800' ±)

Date : 2/25/2016

Project No: 22860.003

Drawn By: athompson

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad

Roads

- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

Structures

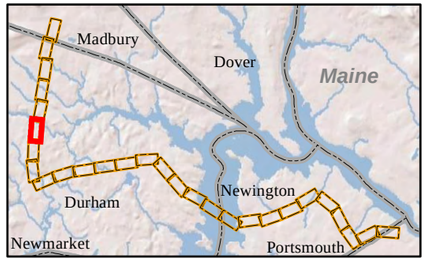
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



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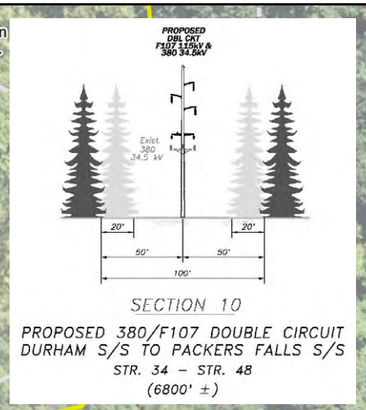
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW47 (PEM/PSS)	Temporary	4563
DW45 (PSS)	Temporary	2889
DW41 (PEM/PSS/PUB)	Temporary	18285



LL# 230.01
dwin
a D.

LL# 230
Jus ice,
David G.

LL# 229
Schlie, Paul
& Robyn

LL# 231
University of New Hampshire
Office of the President

DW41
PEM/PSS/PUB

F107-37

DW43
PSS/PFO

F107-38

F107-39

DW45
PSS

F107-40

DW47
PEM/PSS

F107-41

F107-42

Matchine 6

Matchine 7

LL# 221 07
University of New Hampshire
Office of the President

LL# 221.08
James O. Horrigan
Family Trust

LL#

Date : 2/25/2016

Project No: 22860.003

Drawn By: athompson

Town Boundary
Approximate Parcel Boundary
PSNH Fee Area
Project Corridor
Work Pad

Roads
Local
Not Maintained
Private
State
Railroad

Existing Str (Remain)
Existing Str (Removed/Modified)

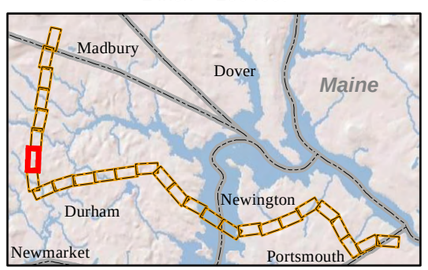
Structures
Direct Embed
Drilled Pier
Relocated Distribution
Access Roads
Underground Cable
Silt Curtain
Silt Fence, Hay Bale, Erosion Control Mix Berm
Straw Wattle

Wetland
Prime Wetland
Wetland Extends
Wetlands Impact
Stream Centerline
Stream Top of Bank
Temporary Culvert
Temporary Mat Bridge
Historical Sites

Designated River Buffer 250'
Conservation Lands
100 Year Floodplain
Steep Slope BMPs
Tree Clearing
Stream Buffer
2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



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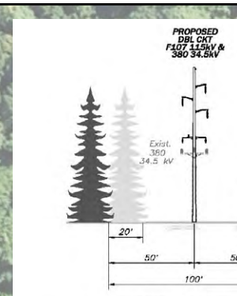
SARAH D. ALLEN
No. 083
CERTIFIED WETLAND SCIENTIST

1/28/16

Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW58 (PSS1/PEM4)	Temporary	8060
DS60 (R2UB3)	Temporary	130



SECTION 10

PROPOSED 380/F107 DOUBLE CIRCUIT
DURHAM S/S TO PACKERS FALLS S/S
STR. 34 – STR. 48
(6800' ±)

LL# 231
University of New Hampshire
Office of the President

LL# 232
State of New
Hampshire Fish & Game

LL# 221.08
James O. Horrigan
Family Trust

F107-42
F107-43
F107-44
F107-45
F107-46
F107-47
DS58
R2UB3
DS60
R2UB3
DW58
PSS1/PEM4
DW56
PEM1/PSS1
Machine 7
Machine 8

Date : 2/25/2016
Project No: 22860.003
Drawn By: athompson

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad

Roads
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

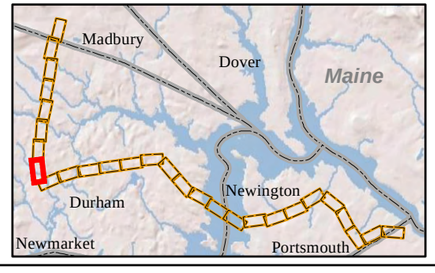
Structures
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



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Environmental Consultants

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SARAH D. ALLEN
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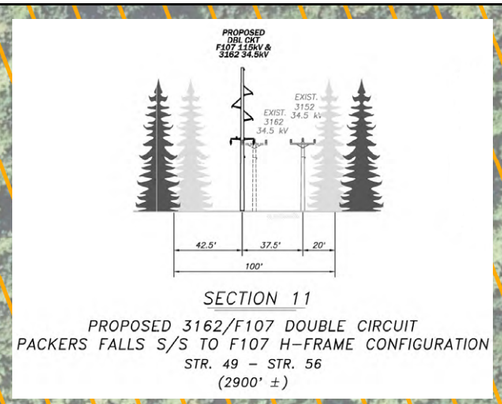


Wetland ID	Impact Type	Area (Sq. Ft.)
DW44 (PEM1)	Temporary	1437
DW48 (PSS/PEM)	Temporary	1176
DW50 (PEM1)	Temporary	1
DW52 (PSS1/PFO1/PEM1)	Temporary	807
DW33 (PEM/PSS)	Temporary	5436
DW54 (PSS1)	Temporary	2739
DW56 (PEM1/PSS1)	Temporary	13910
DW56 (PEM1/PSS1)	Permanent (Str. F107-48)	20
DW101 (PEM1/SS1E)	Temporary	4019
DS46 (R2UB2/4)	Temporary	100
DS35 (R2UB4)	Temporary	79

Date : 2/25/2016

Project No: 22860.003

Drawn By: athompson

Town Boundary
Approximate Parcel Boundary
PSNH Fee Area
Project Corridor
Work Pad

Roads
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

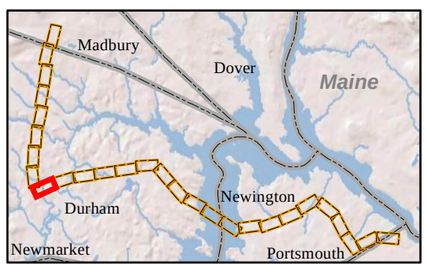
Structures
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



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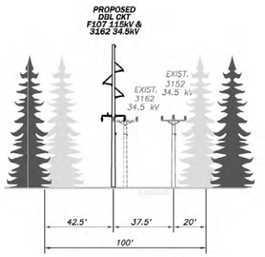
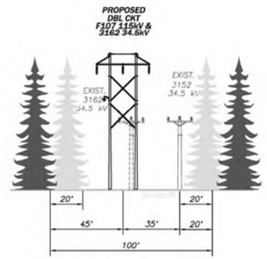
Path: J:\Projects\PSNH_F107\MXD\SRP_MapSet_150ft_022516_Pg9.mxd

Wetland ID	Impact Type	Area (Sq. Ft.)
DW33 (PEM/PSS)	Temporary	5436
DW29 (PEM/PSS)	Temporary	3551
DW29 (PEM/PSS)	Permanent (Str. HEN 3)	20
DW31 (PEM)	Temporary	8940
DW31 (PEM)	Permanent (Str. HEN 1)	20
DW100 (PEM1E)	Temporary	1895
DW100 (PEM1E)	Permanent (Str. HEN 4)	20



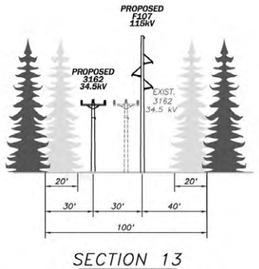
SECTION 11

PROPOSED 3162/F107 DOUBLE CIRCUIT
PACKERS FALLS S/S TO F107 H-FRAME CONFIGURATION
STR. 49 – STR. 56
(2900' ±)



SECTION 12

PROPOSED 3162/F107 DOUBLE CIRCUIT
H-FRAME CONFIGURATION TO ROUTE 108
STR. 57 – STR. 61
(1500' ±)



SECTION 13

PROPOSED F107 SINGLE CIRCUIT &
PROPOSED 3162 SINGLE CIRCUIT
ROUTE 108 TO TIMBER BROOK LANE
STR. 62 – STR. 63
(1100' ±)

Date : 2/25/2016

Project No: 22860.003

Drawn By: athompson

- Town Boundary
- Approximate Parcel Boundary
- PSNH Fee Area
- Project Corridor
- Work Pad

Roads
- Local
- Not Maintained
- Private
- State
- Railroad

- Existing Str (Remain)
- Existing Str (Removed/Modified)

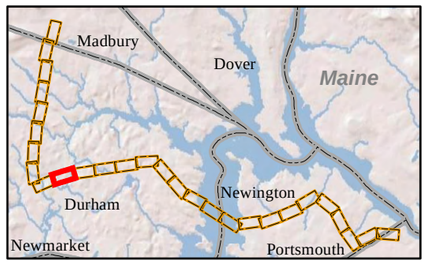
Structures
- Direct Embed
- Drilled Pier
- Relocated Distribution
- Access Roads
- Underground Cable
- Silt Curtain
- Silt Fence, Hay Bale, Erosion Control Mix Berm
- Straw Wattle

- Wetland
- Prime Wetland
- Wetland Extends
- Wetlands Impact
- Stream Centerline
- Stream Top of Bank
- Temporary Culvert
- Temporary Mat Bridge
- Historical Sites

- Designated River Buffer 250'
- Conservation Lands
- 100 Year Floodplain
- Steep Slope BMPs
- Tree Clearing
- Stream Buffer
- 2ft Contour

0 75 150 300 Feet

1 inch = 150 feet



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Seacoast Reliability Project

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1/28/16

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