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March 16, 2021

Kristin Kent, Conservation Chair
Nahant Conservation Commission
Town Hall
334 Nahant Road
Nahant, MA 01908

via email: conservation@nahant.org

Re: 430 Nahant Road: Northeastern University Marine Science Center:
Proposed Coastal Sustainability Institute
DEP File Number: 047-0580

Subject: Review of Notice of Intent filing: Peer Review Report # CSI-1

Dear Commissioners:

In accordance with EcoTec's February 8, 2021 Environmental Peer Review Services Proposal to the Commission, I am pleased to submit this Peer Review Report # CSI-1 to the Commission under the Massachusetts Wetland Protection Regulations (310 CMR 10.00 – the "WPA Regulations") and the Nahant Wetlands Bylaw and associated local regulations ("the Bylaw") for the proposed Coastal Sustainability Institute ("CSI") Notice of Intent ("NOI") filed by Northeastern University ("NU"). In accordance with our proposal, tasks to date have included:

- Administrative completeness review of the NOI materials;
- Site inspection to review the applicant's wetland resource area designations and boundaries, and to view the proposed work areas; and
- Review of proposed work, including mitigating measures and construction methodologies, relative to best practices and conformance with state and local regulatory performance standards for each wetland resource area present.

Please note that EcoTec's review is focused on the ecological-related wetlands concerns, while a concurrent peer review of the stormwater design and related engineering considerations of the wetland regulations is being conducted by Hardy+Man Design Group.

Administrative Completeness:

The NOI materials were filed by Nitsch Engineering on behalf of NU and included:

- Wetlands Protection Act ("WPA") Form 3 (NOI) with associated fee transmittal, abutter notification documents (form of notice, list of abutters, and affidavit of servicer), and reference mapping;
- NOI Report by Nitsch;
- Wetland Resource Analysis Report dated July 31, 2021 by LEC Environmental Consultants, Inc. ("LEC"); and

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- Plan set signed and stamped by William Maher, PE.

I obtained the above documents from the Nahant Conservation Commission (“NCC”) website. Please note that the website link to the FEIR, which reportedly contains the landscape plans, is not functional and to date I have not reviewed the landscape plans.

In addition, based upon my requests for additional information during my site inspection, the applicant’s representatives provided me with the following additional information:

- Bordering Vegetated Wetland (“BVW”) wetland delineation data plots (provided by LEC);

NOI Form:

The filing is relatively complete, as evidenced by the issuance by MassDEP of a file number with no technical comments. Notwithstanding, I note the following administrative issues with the NOI and recommend that the applicant amend the filing accordingly:

1. The NOI (section A) notes “more than one owner” but lists only Northeastern University;
2. Section B2 has checked that work will occur in “Inland Resource Areas” but none are checked. I believe that the only work related to Inland Resource Areas is buffer zone to Bordering Vegetated Wetland (“BVW”) and Inland Bank, as detailed below;
3. Section B-3-f indicates alteration of 180 linear feet (“lf”) of Coastal Bank, while the narrative states that no alteration of Coastal Bank is proposed;
4. Section C-1 does not indicate whether Estimated Habitat of Rare Wetlands Wildlife is present. The narrative indicates that none is present, and Figure 3 (undated) of the NOI shows a lack of Estimated Habitat at the site. The correct box should be checked, and a date provided for Figure 3;
5. Section C-5 (Outstanding Resource Waters) has no box checked, which should be corrected;
6. The Nahant Wetlands Bylaw Regulations require that for a joint state-local NOI, below the heading on page 1 of the NOI Form 3, the following must be added: “*And Nahant Wetlands Protection Bylaw and Regulations.*”

General – Requirement to have Filed for Other Permits:

The Wetlands Protection Act (MGL c.131, s.40) states re NOI filings:

“No such notice shall be sent before all permits, variances, and approvals required by local by-law with respect to the proposed activity, which are obtainable at the time of such notice, have been obtained, except that such notice may be sent, at the option of the applicant, after the filing of an application or applications for said permits, variances, and approvals; provided, that such notice shall include any information submitted in connection with such permits, variances, and approvals which is necessary to describe the effect of the proposed activity on the environment.”

The Regulations at 310 CMR 10.05(4)(e) provide additional clarification of this provision:

“The requirement under M.G.L. c. 131, § 40 to obtain or apply for all obtainable permits, variances and approvals required by local by-law with respect to the proposed activity shall mean only those which are feasible to obtain at the time the Notice of Intent is filed. Permits, variances, and approvals required by local by-law may include, among others, zoning variances, permits from boards of appeals, permits required under floodplain or wetland zoning by-laws and gravel

removal permits. They do not include, among others, building permits under the State Building Code....”

I recommend that the applicant review this requirement with respect to other necessary permit filings and provide a summary to the NCC which addresses the potential need to file for other local permits.

Abutter Notifications:

The NOI includes:

- a copy of the notice mailed to abutters, which provides a reasonable general description of the project, in my opinion;
- a list of abutters prepared and certified by the Nahant Assessors office on June 18, 2020. The NOI indicates that it was filed on 7/31/2020, and the NCC website notes a date of 8/3/2020 associated with the NOI (which I interpret to mean date of NOI receipt). The Regulations and Bylaw do not specify a maximum acceptable age of an abutters list. In my opinion, the approximately 6-week time period between the abutters list certification and the filing is reasonable;
- the Regulations state that *“Mailing at least seven days prior to the public hearing shall constitute timely notice. The applicant shall present either the certified mail receipts or certificate of mailing receipts for all Abutters at the beginning of the public hearing. The presentation of the receipts for all abutters required to be notified as identified on the tax list shall constitute compliance with Abutter notification requirements.”*
 The NCC should verify that documentation of mailing has been provided; and
- The Bylaw requires an affidavit of abutter service. The NOI includes such an affidavit, however the copy on the NCC website is unsigned. If a signed affidavit has not been provided, the applicant should do so.

Filing Fees:

The NOI includes documentation of filing fees under the WPA and Bylaw, based upon the following fee categories:

Category	# of items	WPA unit fee	WPA total fee	Bylaw unit fee	Bylaw total fee
2b.) - Parking Lot	2	\$500	\$1,000	\$250	\$500
2h.) - Control Vegetation	1	\$500	\$500	\$250	\$250
3c.) - Road Construction	1	\$1,050	\$1,050	\$525	\$525
3b.) - Each Building	1	\$1,050	\$1,050	\$525	\$525
1d.) - Resource Improvement	1	\$110	\$110	\$55	\$55
1b.) - Site Work	1	\$110	\$110	\$55	\$55
TOTAL PROJECT FEE			\$3,820		\$1,910

I note that the Regulations state with respect to category 3b (commercial building) that “Any activities associated with the construction of said building, including associated site preparation... shall not be subject to additional fees if all said activities are reviewed under a single Notice of Intent. I note also that that category 1.b (site work) is for work associated with single-family home projects. The category 1.b portion of the fee appears to be unnecessary. Therefore, in my opinion, the fees paid are sufficient to cover the required NOI fees under the Regulations and the Bylaw.

Plan Scale:

The Bylaw Regulations specify the following minimum plan scale requirements unless a waiver is requested and the Commission determines that strict adherence is not necessary:

- Profile view: Horiz: 1"=10', Vert: 1"=4' (provided: 1"=10; 1"=2' - complies);
- Plan view: 1" =10' (provided: 1"=40' – does not comply).

A scale of 1" =40' is typical for projects of this nature. The applicant should request a waiver of this provision and the Commission consider if 1" =10' plans are necessary.

Site Inspection and Wetland Resource Areas:

I conducted a site inspection on March 10, 2021. For efficiency, a single comprehensive site inspection was conducted relative to both NOIs under review by the Commission (seawater intake and Coastal Sustainability Institute). Conditions for the inspection were favorable, with warm and dry conditions and no snow cover. The inspection was timed to begin approximately 3-hours before low tide, to allow for viewing of intertidal areas.

Present with me for the site inspection were the Commission's peer review engineers: Shawn Hardy, PE and Chi Man, PE of Hardy+Man Design Group.

Also present for the site inspection were representatives of the applicant:

- Tim MacKay - Northeastern University
- Bob Lambert - Northeastern University
- Dr. Dwight R. Dunk, PWS, BCES - Epsilon Associates
- for the Coastal Sustainability Institute NOI:
 - William Maher, PE - Nitsch Engineering
 - Brian Madden - LEC Environmental
- for the Seawater Intake NOI:
 - Richard E. Galat - TAG Engineering
 - Sarah Pierce - PARE Corporation

At my request, the applicant's representatives described their characterization and delineation of Wetland Resource Areas and the proposed work under both NOIs. I reviewed the wetland resource area delineations with the applicant's representatives.

Wetland Resource Areas at the site are depicted on the NOI plans and described in the July 31, 2020 Wetland Resource Area Analysis Report by LEC. I discuss below the delineations of Resource Areas where work is proposed in a resource area or in close proximity.

Coastal Bank:

Coastal Banks are delineated in accordance with the definition at 310 CMR 10.30(2) as:

"the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland"

The Coastal Bank delineation criteria are further detailed in MassDEP Policy 92-1. In the areas where work is proposed in close proximity to the Coastal Bank, the Bank boundary is abrupt and straightforward in my opinion, and I concur with the Coastal Bank delineation interpretations in the NOI.

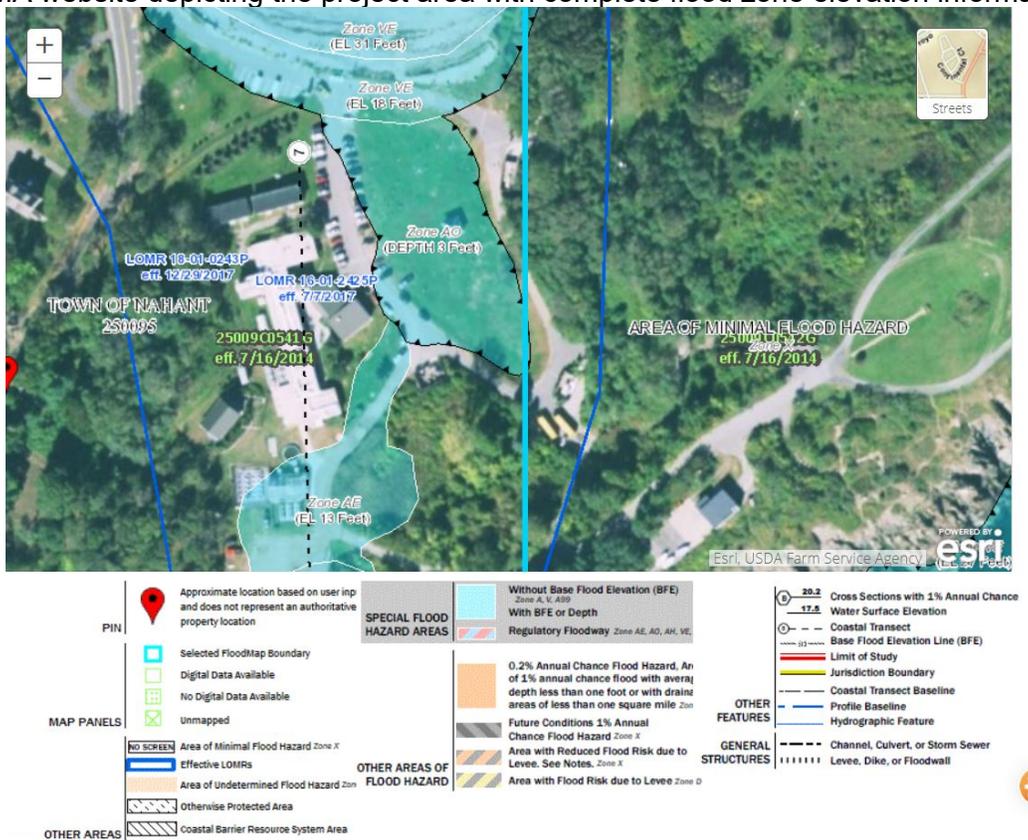
Land Subject to Coastal Storm Flowage (“LSCSF”)

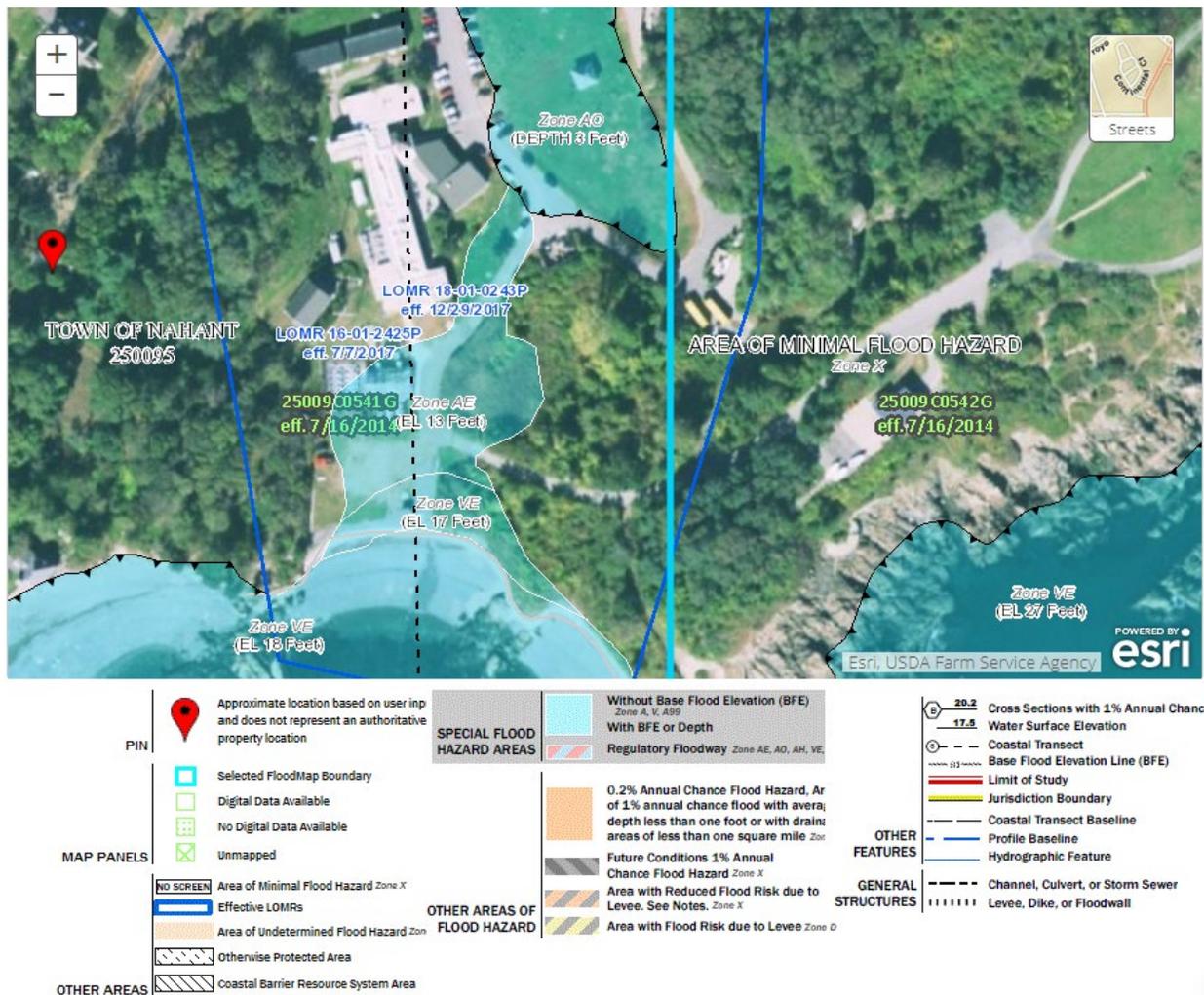
Under state and local regulations, Land Subject to Coastal Storm Flowage (“LSCSF”) includes all areas of the site above the Coastal Bank and Beach subject to any inundation, including wave action, from the 100-year storm, surge of record or storm of record, whichever is greater. At the site, FEMA flood mapping, including Letters of Map Revision, indicates three zones that are included within the LSCSF boundary of the site:

- Zone AE (Elevation 13) in the southern part of the property;
- Zone AO (Depth 3-feet): located within the low-lying field east of the cluster of buildings near the site entrance in the northern and central part of the property; and
- Velocity Zone VE (Elevations 17 and 18 extending landward for a mapped distance from Bathing and Canoe Beaches).

Also, Velocity Zone VE elevation 27 is found associated with much of the perimeter of East Point, outside of the project limits, and a small area of VE Zone elevation 31 is located north of Canoe Beach.

The site plans include mapping of these LSCSF areas. The Zone VE boundary and Zone AO boundary are mapped on the site plans based upon the FEMA boundary location, while the Zone AE (Elevation 13) boundary is plotted on the site plans to coincide with the 13-foot contour of actual surveyed site topography. The VE and AO boundaries appear to be accurately transcribed. Based upon the site topography provided, the AE boundary appears to be consistent with state and local LSCSF definitions. Because the FEMA FIRMette maps provided with the NOI do not include all of the above detailed elevations, I include two images below from the FEMA website depicting the project area with complete flood zone elevation information.





BVW Boundary Review:

I conducted a detailed flag-to-flag review of the Bordering Vegetated Wetland (“BVW”) boundary with Brian Madden of LEC, who had completed the BVW delineation. I reviewed the BVW boundary in accordance with the definition set forth in the regulations at 310 CMR 10.55(2)(c). Section 10.55(2)(c) states that “The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.” The methodology used to delineate Bordering Vegetated Wetlands is further described in: (1) the BVW Policy “BVW: Bordering Vegetated Wetlands Delineation Criteria and Methodology,” issued March 1, 1995; and (2) “Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: A Handbook” produced by the Massachusetts Department of Environmental Protection, dated March 1995.

The BVW and immediate surrounding area contains historically disturbed soils and the remnants of a concrete block foundation, but a portion of this disturbed area satisfies the criteria for BVW jurisdiction. The BVW plant community consists of a near monoculture of invasive

common reed (*Phragmites australis*). The *Phragmites* is present to some degree outside of the delineated BVW but those areas were reasonably excluded in my opinion due to the lack of wetland hydrology and/or the sufficient presence of upland plant species including cherry (*Prunus* sp) staghorn sumac (*Rhus typhina*) Pokeweed (*Phytolacca americana*) Virginia creeper (*Parthenocissus quinquefolia*) Asiatic bittersweet (*Celastrus orbiculata*) rugosa rose (*Rosa rugosa*) and Climbing Nightshade (*Solanum dulcamara*). In my opinion the BVW delineation is consistent with the Regulations and the DEP BVW delineation Policy.

Inland Bank:

The BVW area borders a small internal intermittent stream which continues as a culvert that discharges through the seawall to the south. The intermittent stream contains the wetland resource area Bank as defined at 310 CMR 10.54(2)(a). The intermittent stream Bank, including the culvert to the seawall, should be identified on the plans and the 100-foot Buffer Zone revised accordingly.

Other Coastal Wetland Resources

Land Under the Ocean, Coastal Beach, Rocky Intertidal Shores and a man-made Coastal Dune (which the applicant described as being constructed above a portion of Canoe Beach north of Nahant Road under wetlands File #047-0529 and subsequently substantially eroded) are also present on the site seaward of the proposed limit of work for the Coastal Sustainability Institute.

Buffer Zone:

State regulations attach a 100-foot Buffer Zone to all of the above resource areas except LSCSF. Nahant Bylaw regulations state that: "Wetland resource areas, as defined in Section 2 of the Wetlands By-law, include land within 100 feet of the other resources areas identified therein." Therefore, as noted on the site plans, the Bylaw attaches a 100-foot Buffer Zone to LSCSF. As discussed below, under the Bylaw, the Buffer Zone to LSCSF is regulated as a jurisdictional wetland resource area.

Based on my site inspection and review of the plans, the NOI, including attachments, accurately describes site conditions and wetlands jurisdiction, except as noted above. The site includes a wide range of conditions, including sand and cobble beach, retaining walls, rock outcrop, manicured lawn areas, gravel and paved driveway and parking, buildings, scrub-shrub/woodlands, and *Phragmites*-dominated wetland. As indicated on the NOI plans, a substantial portion of the site property is located within Land Subject To Coastal Storm Flowage ("LSFSF") and associated state and local Buffer Zone.

Proposed Work and Performance Standards Evaluation – Preliminary Comments:

Proposed work for the CSI includes activities within the following jurisdictional areas:

- LSCSF (state and local);
- Buffer Zone to Coastal Bank, Inland bank, and BVW (state and local); and
- Buffer Zone to LSCSF (local only).

State regulations at 310 CMR 10.00 do not currently contain regulatory performance standards for work in LSCSF. The Nahant Regulations Section V.B provides regulatory presumption that LSCSF is significant to the protection of the Bylaw interests and states that:

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“If the following activities, when combined, alter a total of 5,000 or more square feet in LSCSF (with the exception of the construction of a single-family home) they shall be presumed to have unacceptable significant or cumulative effects upon the protection of wildlife habitat: construction of new or proposed expansions of roads, driveways or parking lots; construction of impermeable paving for existing unpaved roads, driveways or parking lots; and/or any activities which will result in the building within or upon, removing, filling and/or altering (as defined in Section 2 of the Wetlands By-law) of any vegetated area(s).”

The CSI NOI proposes more than 5 times the 5,000 sf LSCSF alteration threshold, however not all of the proposed LSCSF work area is subject to the presumption. Therefore, I recommend that the NOI clearly indicate how much of the proposed work is subject to the above presumption, to determine whether the 5,000 sf threshold is triggered, and if so, the applicant should address the regulatory presumption of impact to wildlife habitat.

The Bylaw Regulations Section V.C identifies eight performance standards for work in LSCSF. The NOI discusses these performance standards under the heading “Conformance with the Nahant Performance Standards for Buffer Zone.” While proposed mitigation in the form of restoration of temporary alterations (e.g., for utility installations) and invasive species vegetation management and native planting are described, it is difficult to conduct a detailed assessment of the nature and extent of the proposed changes to the site within wetlands jurisdiction. Therefore, I recommend that for all work areas within the Commission’s jurisdiction, the applicant provide a detailed summary table that indicates the major categories of work proposed (e.g., driveway/parking, building, stormwater structures, utilities) and tabulates the size (sf) and condition (e.g., paved, type of vegetative cover, etc.) of each category under existing and proposed conditions. Due to possible overlap of work zones, it may be appropriate to combine proposed CSI alterations with alterations proposed for the seawater intake. With the recommended table as a reference, the applicant should then provide an analysis of how the proposed project satisfies or overcomes the unacceptable effect presumption of the Bylaw for LSCSF. A similar analysis is recommended for state and local Buffer Zones (discussed below).

The NOI analysis should, in my opinion, provide a greater level of detail with respect to compliance with the eight Bylaw LSCSF performance standards (e.g., the statement “The proposed project will not result in the reduction in the ability of the land to buffer more inland area from flooding and wave damage” should be substantiated with information concerning land surface conditions).

Buffer Zone Performance Standard: State Regulations

State Regulations at 310 CMR 10.53(1) provide a narrative standard for work in the Buffer Zone and state:

“...If the issuing authority determines that a resource area is significant to an interest identified in M.G.L. c. 131, § 40 for which no presumption is stated in the Preamble to the applicable section, the issuing authority shall impose such conditions as are necessary to contribute to the protection of such interests. For work in the buffer zone subject to review under 310 CMR 10.02(2)(b)3., the issuing authority shall impose conditions to protect the interests of the Act identified for the adjacent resource area. The potential for adverse impacts to resource areas from work in the buffer zone may increase with the extent of the work and the proximity to the resource area. The issuing authority may consider

the characteristics of the buffer zone, such as the presence of steep slopes, that may increase the potential for adverse impacts on resource areas. Conditions may include limitations on the scope and location of work in the buffer zone as necessary to avoid alteration of resource areas. The issuing authority may require erosion and sedimentation controls during construction, a clear limit of work, and the preservation of natural vegetation adjacent to the resource area and/or other measures commensurate with the scope and location of the work within the buffer zone to protect the interests of the Act. Where a buffer zone has already been developed, the issuing authority may consider the extent of existing development in its review of subsequent proposed work and, where prior development is extensive, may consider measures such as the restoration of natural vegetation adjacent to a resource area to protect the interest of the Act. The purpose of preconstruction review of work in the buffer zone is to ensure that adjacent resource areas are not adversely affected during or after completion of the work.”

Buffer Zone Performance Standard: Bylaw Regulations

The Nahant Wetland Bylaw identifies the land within 100-feet of other wetlands resource areas (including LSCSF) as a jurisdictional resource and states: “*The intent of the Wetlands By-law and these regulations is to supplement the state review and provide review of additional resource areas not covered under G.L. c. 131, § 40, the Wetlands Protection Act.*” The Bylaw does not provide detailed regulatory performance standards for work in the 100-foot Buffer Zone; however, the applicant must demonstrate that the interests of the Bylaw are protected by all such work. I recommend that the applicant provide such an analysis that is modelled on the Bylaw LSCSF performance standards and considers all of the Bylaw Interests.

Canoe Beach Stability:

As described above, Canoe Beach is located in a velocity zone, and a dune restoration project between Nahant Road has reportedly been largely eroded by wave energy. The project proposes a large sewer line in Nahant Road in close proximity to this area of reported recent erosion. I recommend that the applicant evaluate and document the vulnerability of existing and proposed utilities near Canoe Beach.

Bylaw Regulations Section XIII. Standards of Review for Wetland Alteration

These provisions appear to be related to proposed filling/ alteration of a vegetated wetland; however, the Commission should advise if otherwise.

Erosion and Sediment Control:

The NOI includes a perimeter erosion control barrier and multiple plan details for possible erosion control best management practices (“BMPs”) but does not provide adequate information, in my opinion, concerning how the project would be constructed in a manner that does not result in erosion impacts to nearby wetland resource areas. The NOI states that the contractor will be required to comply with NPDES requirements to develop a Stormwater Pollution Prevention Plan (“SWPPP”). While this is true, it is my opinion that the NOI should detail minimum requirements and methods of erosion and sediment control. For example, the NOI should:

- Specify the construction detail of the minimum proposed perimeter erosion control barrier (the site plans include details for several types of erosion control barriers);

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- Evaluate the suitability of the perimeter barrier at its most susceptible points where runoff will concentrate, by identifying the size and nature of sub-watersheds that drain to low points in the barrier. This would be much more easily done if the erosion control plan including existing and proposed contours;
- Specify minimum monitoring and repair frequencies and thresholds for all erosion and sediment control BMPs;
- Determine the need for and sizing of temporary sediment basins, based upon the size and shape of sub-watersheds within the work footprint;
- Identify project phasing, including staging and stockpiling, to minimize the amount of exposed soil;
- Specify when and where the various BMPs on Sheet C-9 would be implemented.

I hope that this information is helpful and look forward to providing further review. Please do not hesitate to contact me if you have any questions concerning this or other matters.

Sincerely,

A handwritten signature in blue ink that reads "Paul J. McManus". The signature is written in a cursive, flowing style.

Paul J. McManus, PWS
President

c: Hardy+Man Design Group
Applicant, c/o Tim MacKay - Northeastern University