

EAST-SOUTHEAST, LLC

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1038 Main Street ° Chatham, Massachusetts 02633

41°41'14.73425" N, 69°58'24.87695" W -10.019 M

NOURISHMENT PLAN

October 29, 2019

Property: 450 Old Harbor Road, Chatham, MA

In association with the coastal engineering structure also referred to as 'CES' located on 450 Old Harbor Road the following Nourishment Plan is offered. The Wall was permitted by the Conservation Commission under Orders of Conditions SE10-2247 and SE 10-2611. The Wall was permitted and constructed along two property lines. The permits included references to nourishment on the abutting properties.

1. Permissions and Responsibilities

- a. The owner of 450 Old Harbor Road reconstructed and expanded a bulkhead with the understanding that the negative impacts caused by this CES would be remedied with sand nourishment on the abutting beaches.
- b. The owner of 450 Old Harbor Road is the applicant and has the sole responsibility and requirement to nourish the abutting beaches to offset the break in the littoral transport caused by the existence of the CES and otherwise implement this Nourishment Plan.
- c. As the CES is along the Northerly and Southerly Boundaries of Locus, the nourishment must be placed on the abutting properties. Permissions must be acquired from the following interested parties:
 - i. North: The owner(s) of 448 Old Harbor Road.
North: The members or Managing Trustee of the Old Harbor Homeowner's Association.
 - ii. South: The owner(s) of 594 Shore Road.
- d. Permission shall be in writing. It shall be submitted to the Conservation Department. Without permission, there shall be no nourishment.
- e. The abutters have no responsibility to perform any of the activities listed within

the Nourishment Plan or allowed within the associated Order of Conditions. However, the abutters are allowed the ability to perform any of the permitted activities. These activities must be performed under the direction of the owner of 450 Old Harbor Road. If any activity occurs outside of the scope of the Nourishment Plan or Order of Conditions, the offending party shall be responsible for the remedy.

2. Site Preparation and Nourishment

- a. Prior to starting work, the Conservation Agent shall be notified. The Agent will determine if a site visit is necessary before the work commences.
- b. Prior to starting work, the abutters will be notified in the manner described in the Access Agreement.
- c. The area shall be photographed prior to the start of work.
- d. 448 Old Harbor Road, 450 Old Harbor Road and 594 Shore Road shall be inspected and the following actions shall be performed:
 - i. Concrete, bricks and other debris shall be removed from the beach.
 1. To determine the origin of the debris, the parties shall use good faith judgment. If the source cannot be determined between the parties, an independent third party will be consulted.
 - ii. Sands to coarse pebbles (<1.5") shall remain.
 - iii. Very Coarse Pebbles (<2.5") shall be removed from the beach.
 1. On 448 Old Harbor Road and 594 Shore Road, only those Coarse Pebbles that originated from 450 Old Harbor Road shall be relocated.
 - iv. Small Cobbles (2.5" to 8") shall be relocated to the lowest available locations along the base of the wall. Small Cobbles shall be placed on sand and not over other stones.
 1. On 448 Old Harbor Road and 594 Shore Road, only those Small Cobbles that originated from 450 Old Harbor Road shall be relocated.
 - v. Large Cobbles (8" to 10.1") shall be relocated over the Small Cobbles.
 1. On 448 Old Harbor Road and 594 Shore Road, only those Large Cobbles that originated from 450 Old Harbor Road shall be relocated.

- vi. Small Boulders (10.1" to 16") shall be relocated over the Large Cobbles.
 - 1. On 448 Old Harbor Road and 594 Shore Road, only those Small Boulders that originated from 450 Old Harbor Road shall be relocated.
- vii. To determine the origin of the debris, the parties shall use good faith judgment. If the source cannot be determined between the parties, an independent third party will be consulted.
- e. Additional Small Boulders (10.1" to 16") shall be placed along the northerly extent of the bulkhead to minimize wave energies that may exacerbate impacts to adjoining beaches.
- f. All nourishment shall be placed above Mean High Water and Mean Higher High Water.
- g. All nourishment shall be sand compatible with the sands found in the area. It is noted that the requirements set forth by the abutters is to nourish with sand compatible in color.
- h. All nourishment is to be considered sacrificial. There will be no fencing, matting or other efforts made to hold these sands in place.
- i. The nourishment along the north side of locus shall be within allowed areas authorized by the abutter. It shall be placed above elevation 3 to cover the wall along the northerly jog leaving the cap exposed. The wall will be covered as much as possible leaving the sand at a reasonable angle of repose.
- j. The nourishment along the south side of locus shall be within allowed areas authorized by the abutter. It shall be placed above elevation 3 to cover the wall along the southerly jog leaving the cap exposed. The wall will be covered as much as possible leaving the sand at a reasonable angle of repose.
- k. The ground elevation behind the low section of wall shall be nourished when other nourishment occurs. This area is identified on the plan as the proposed nourishment, Approximately 20 yards over 500 S.F.
- l. When erosion or avulsion causes a nourishment trigger to be met, the applicant shall nourish immediately regardless of the time since the previous nourishment. The owner of 450 Old Harbor Road may nourish before the erosion exposes the trigger points described in the Inspection Section.

- m. Machinery and materials access shall be from the north side within the easement for work on the north side. It shall be over the lawn for work on the south side. No removal of vegetation is proposed. Temporary protective matting can be placed during work. Any damage from the machinery shall be repaired immediately.
- n. The area shall be photographed after the end of work.

3. Inspections, Reporting and Triggers

- a. The owner of 450 Old Harbor Road shall engage the services of an independent third party qualified in these matters to assure the following inspection and reporting requirements occur:
- b. The site shall be inspected at least twice a year by an independent third party. A spring inspection shall occur prior to May 15th of every year.
- c. The site shall be inspected after substantial storms with particular attention to the abutting properties where deflection may exacerbate erosion.
- d. Photographs shall be taken to document the conditions. These photographs shall be taken from similar vantage points.
- e. An annual report shall be prepared and submitted to the Conservation Commission. Photographs shall be included.
- f. The annual report shall be provided to the owners of 448 Old Harbor Road, 694 Shore Road and the members of the Old Harbor Homeowner's Association. This report can be provided in digital form.
- g. At the Conservation Agents' discretion, a survey of the area will be performed and a comparison to the previous survey shall be completed to determine the volumes of change. A digital elevation model shall be provided to the Conservation Commission to provide to a new consultant should the consultant change.
- h. The top of the anchor wale of the northern bulkhead jog is at elevation 8.1 and the bottom is at elevation 7.4. The trigger for nourishment shall be when any part of the bottom of the wale is exposed.
- i. The bottom of the wooden cap of the westerly end of the southern bulkhead jog is at elevation 6.6. The trigger for nourishment to restore sand in accordance with the nourishment plans will be when the sand is 12" below the bottom of the cap at the westerly end.

- j. Horizontally along the westerly end of the southern bulkhead jog the cap is composed of a section of lumber that is approximately six feet in length. The trigger for nourishment shall be when the nourished sand erodes to a point behind this joint.

4. Modification of the Nourishment Plan

- a. Site conditions are likely to change and review of the plan will be necessary.
- b. The third party consultant is most likely to recognize that the plan requires revision. The owner of 450 Old Harbor Road can review the status with the third party consultant. The abutters can review the status with the owner of 450 Old Harbor Road or the third party consultant.
- c. The Conservation Agent shall be contacted to review the extent of the change of the plan. It is expected that the change in the plan will require review by the Commission.
- d. The owner of 448 Old Harbor Road and the Old Harbor Homeowner's Association shall be contacted with preliminary proposed modifications to the plan that affect the property to the north prior to finalizing a revised plan to file with the Conservation Commission.
- e. The owner of 594 Shore Road shall be contacted with preliminary proposed modifications to the plan that affect the property to the south prior to finalizing a revised plan to file with the Conservation Commission.

Copy: DEP, Southeast Regional Office