Vine ASSOCIATES, INC.

372 Merrimac Street
Newburyport, MA 01950

Phone: 978-465-1428
Fax: 978-465-2640

Memorandum

To: James Foley, Feoffees
Larry Graham, Graham Associates, Inc.

From: David Vine, Vine Associates, Inc.

Re: Feoffees Embankment Storm Damage
Permit Issues on Stabilization Work
Ipswich, MA

Date: May 2, 2007

As requested, VAI has made a site visit to the above referenced project site on April 23, 2007 to observe damage conditions to the shoreline embankment and seawall areas resulting from the storm of April 16 through 18, 2007. Present for this inspection were Donald Whiston and James Foley of the Feoffees (of the Grammar School of the Town of Ipswich), and Larry Graham of Graham Associates, Inc. The following is a general description of the conditions observed, as well as our understanding of the regulatory approvals and requirements that would be necessary for the immediate and long-term stabilization of the damaged areas.

The damaged areas considered were located along the east shoreline embankment (drumlin) of Ipswich's Little Neck within Ipswich Bay. Figure 1 illustrates the general location of the damaged areas. No field measurements were taken at the time of the site inspection, whereby the dimensions indicated by this memorandum are only per general observations, to be confirmed by further site surveys.

Area 1 as noted by the figure was observed to have general sloughing of the embankment sideslope. This condition appears to be due to the high tide conditions saturating and eroding the toe area, which caused subsequent instability of the slope. This type of condition appeared in 4 locations extending about 400 to 500 linear feet, with the sloughing extending up about 2/3 of the approximate 30 foot height of the embankment. Photographs 1, 2, 3 and 4 illustrate the general conditions observed.

Area 2 as indicated by the Figure 1 is a prior armored bank extending about 1,500 linear feet southeast from Area 1. Discussions indicated that the area was prior armored about 50 years ago. This area appeared to have weathered the storm conditions well and no apparent new areas of damage due to the storm were observed. Photographs 4 (at interface with Area 1) and 5 illustrate general conditions observed.

Area 3 was an approximate 200 linear foot area where the embankment height is much lower, terminating to the southwest in a timber shoreline retaining structure, as illustrated by Photographs 6 and 7. Here the damage appears to be related to the deterioration of a vertical

timber seawall consisting of embedded old railroad ties with placed concrete along the top of the wall. Damage observed included sinkholes where retreating high water transported soils located landward of the wall causing sinkholes and erosion of the roadway located landward of the wall. This condition was partially and temporarily stabilized by the placement of stone material to fill in the voids, which operations were apparently undertaken immediately following the storm.

We understand that upon observation of this damage, representatives of the Feoffees reported these conditions to the Conservation Commission, and received an Emergency Orders of Conditions to stabilize the areas within 30 days. Although this action was very appropriate for immediate work, long-term stabilization and other agencies with possible jurisdiction over the damaged areas will also have further requirements for the final permitting of stabilization work. The following is a general description of such requirements:

1. DEP Waterways – (310 CMR 9.00) - Chapter 91 has jurisdiction over all existing or proposed permanent structures located below the mean high water (MHW) level. Survey of the area would be necessary to determine the existing elevations for any proposed armor repairs to be undertaken. Any proposed long-term structural or fill solutions that occur below the mean high water level would require a Chapter 91 Waterways License from DEP. Non-structural repairs, such as vegetation (without fill), would not require such Chapter 91 licensing. Authorization for emergency actions for structures located within such tidal areas include a written request to be submitted to DEP which describes the location and work to be performed and specifies why the project is necessary for the protection of the health or safety of the public. A statement from a federal, state or municipal agency certifying that there is an emergency and specifying why said project is necessary to avoid or eliminate a serious and immediate threat to public health, safety, or the environment must accompany that request (310 CMR 9.20 (1). The time limit to perform the emergency work shall not exceed 30 days and a license application would need to be submitted within 30 days of the date of emergency approval.

2. DEP Wetlands Protection Act – (310 CMR10.00)– These requirements are administered through the local Conservation Commission for all projects which have activities that are located in defined resource areas and their associated buffer zones. The Feoffees obtaining an Emergency Orders of Conditions would meet the requirements for undertaking the work under 310 CMR 10.06 (Emergencies). Under this provision, the time limitation to perform emergency work is 30 days.

   Resource areas at this site include (but may not be limited to) Coastal Bank and Coastal Beach. Under the Wetlands Protection Act, when a Coastal Bank is determined to be significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes or barrier beaches, the following regulations apply (310 CMR 10.30(3) through (5)): no new bulkhead, revetment...or other engineering structure shall be permitted on such a coastal bank EXCEPT...when required to prevent storm damage to buildings constructed prior to...August 10, 1978. These structures may be allowed if it is designed and constructed to minimize adverse effect on adjacent or nearby coastal beaches due to changes in wave action and that the applicant demonstrates that there is no other feasible method to protect the building.

When a Coastal Bank is determined to be significant to storm damage prevention or flood control because it is a vertical buffer to storm waters, the following regulations apply (310 CMR 10.30(6) through (8)): Any project on such a coastal bank shall have no adverse effects on the stability of the coastal bank; coastal engineering structures may be permitted except with such a bank is significant to storm damage prevention or flood control because it supplies sediment to coastal beaches, coastal dunes or barrier beaches; and may not have any adverse effects on specified habitat sites of rare species.

3. Massachusetts Environmental Policy Act (MEPA) (301 CMR 11.00) – The MEPA office is part of the Executive Office of Environmental Affairs (EOEA) which is a state agency having jurisdiction over projects which exceed various thresholds related to resource areas and other regulatory agency requirements. Under section 301 CMR 11.03(3)(b) (1)(a) of these requirements, " Provided that a Permit is required, the alteration of a coastal bank" requires an Environmental Notification Form (ENF) filing and other MEPA review if the Secretary (of EOEA) so requires". The term "Permit" in this instance would refer to a Chapter 91 License or Superseding Order of Conditions. A local Order of Conditions is not considered a "Permit" under MEPA. For example, if the survey indicates that the proposed work is located below MHW (and a Chapter 91 License is required), then an ENF filing would be required.

   In addition, if the project falls within an Area of Critical Environmental Concern (ACEC), an ENF must be filed for any work except a single-family house. The boundary of the Great Marsh ACEC (formerly Parker River/Essex Bay ACEC) at this site is 10 feet above mean sea level. If any work is conducted below this elevation, the project would be considered within the ACEC.

   Emergency action for projects under MEPA jurisdiction (301 CMR 11.13) requires that the proponent make all reasonable efforts to obtain the prior written approval of the (EOEA) Secretary. The proponent shall limit any emergency action taken without prior due compliance with MEPA and 310 CMR 11.00 to the minimum action necessary to avoid or eliminate the imminent threat. The proponent shall file an initial ENF describing the project in as much detail as is then known with 10 days of commencement of the project. The initial ENF shall describe all measures taken to avoid or minimize potential environmental impacts from the emergency action, describe any additional measures to be taken to mitigate potential impacts and list any agency to which the proponent provided prior notification of, or from which the proponent received prior approval for, the emergency action. Within the earlier of 60 days of commencement of the project or when the threat is no longer imminent, the proponent shall undertake full due compliance with MEPA and 301 CMR 11.00 by filing an amended or substitute ENF or any other review document that the Secretary may require after reviewing the initial ENF.

   All ENF filings are distributed to many various local and state agencies, including DEP and the Massachusetts Office of Coastal Zone Management. These agencies, in turn, provide comments which are taken into consideration when the Secretary issues a Certificate for the project describing what further actions should be necessary.

4. Massachusetts Office of Coastal Zone Management (MCZM) – As stated above, MCZM reviews and provides comments for projects that meet the MEPA thresholds. They also provide review of projects that require U.S. Army Corps of Engineers permits and issue a statement of Federal Consistency. Therefore, the survey of proposed work in relationship to MHW and High Tide Level will determine their jurisdiction and level of input over this project. In general, MCZM does not support projects that provide "hard" solutions (armoring) and are much more in favor of projects which provide "soft" or vegetative solutions for long-term stabilization.

5. U.S. Army Corps of Engineers (USACE) – A permit from the USACE is required for any new permanent structures placed below the high tide level (HTL). This level is generally considered the highest tide of the year which would generally be in the order of elevation +12 (mean low water datum). A project of this nature would typically require a Programmatic General Permit (PGP) from the USACE. This project would fall under a Category 2 review.

   In addition, a project proponent may request emergency authorization from the USACE, but it is the USACE who determines if a project qualifies for the emergency situation procedures. Emergency situations are limited to "sudden, unexpected occurrences that could potentially result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process an application under standard procedures. If an emergency situation requires action in less than 30 days after the occurrence, it qualifies for the USACE amended notification procedures.

6. Natural Heritage and Endangered Species Program (NHESP) Review- The project site is located within or adjacent to a Priority Habitat of Rare Species. Under the Massachusetts Endangered Species Act (MESA) (321 CMR 10.00), any project occurring within a Priority Habitat is required to undergo review by the NHESP. An information request should be submitted to NHESP to determine if further review at this site is required.

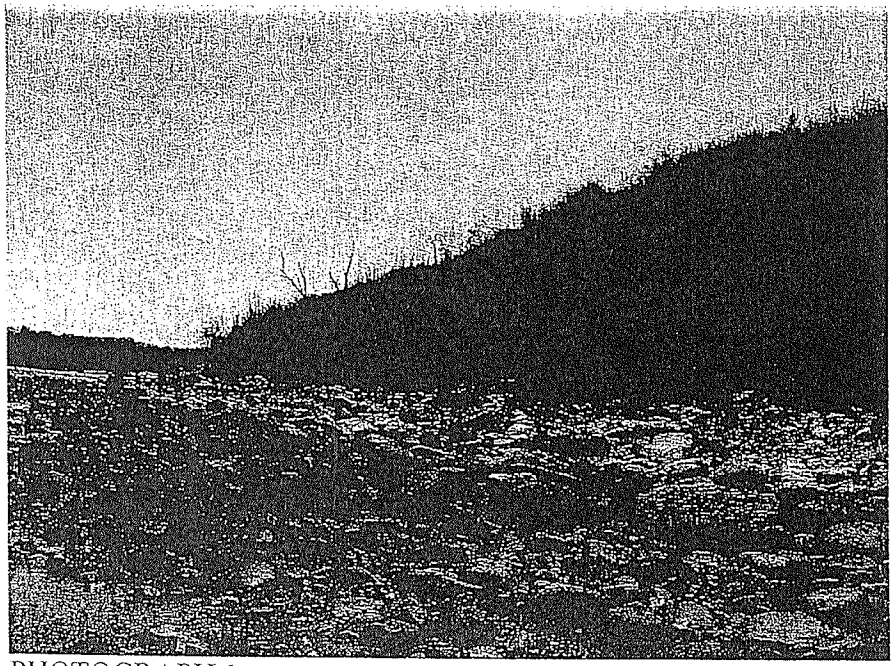
Based on the conditions observed, including the success of prior armoring within Area 2, we would recommend a long-term solution for Area 1 to be stone armoring. We understand that for short-term stabilization, this method could be undertaken. However, there are follow-up requirements that will need to be advanced with other regulatory agencies, depending on the level of jurisdiction of the proposed work. **Although the short-term emergency stabilization work can be advanced by undertaking the above regulatory actions, they could be opposition by the agencies for this work to remain in place as a permanent solution.**

If the proposed work is located below the level of MHW and HTL, short-term and long-term additional approval requirements would include all of the permits listed above, with the possible exception of MESA review

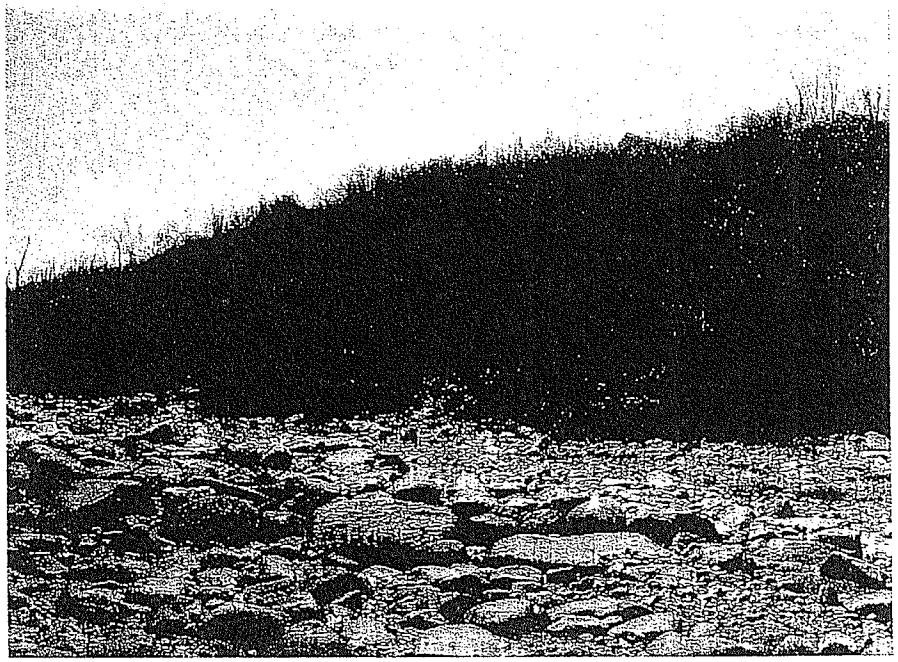
If the proposed work is located above the MHW and HTL, it is our interpretation that short-term and long-term additional approval requirements would include only a local Order of Conditions if the site is located outside of the ACEC and Priority Habitat. If the site is within the ACEC, an ENF filing would also be required. If the site is within a Priority Habitat, a MESA review filing would also be required.

Based on the conditions observed for Area 3, we would recommend that a new shoreline retaining structure be placed just seaward of the existing structure. Records should be consulted to determine if a Chapter 91 license exists for the structure. If the structure is currently authorized under Chapter 91, no further licensing is needed. If a currently valid Chapter 91 License does not exist, many of the permits discussed above would apply, depending on elevation and resource area.

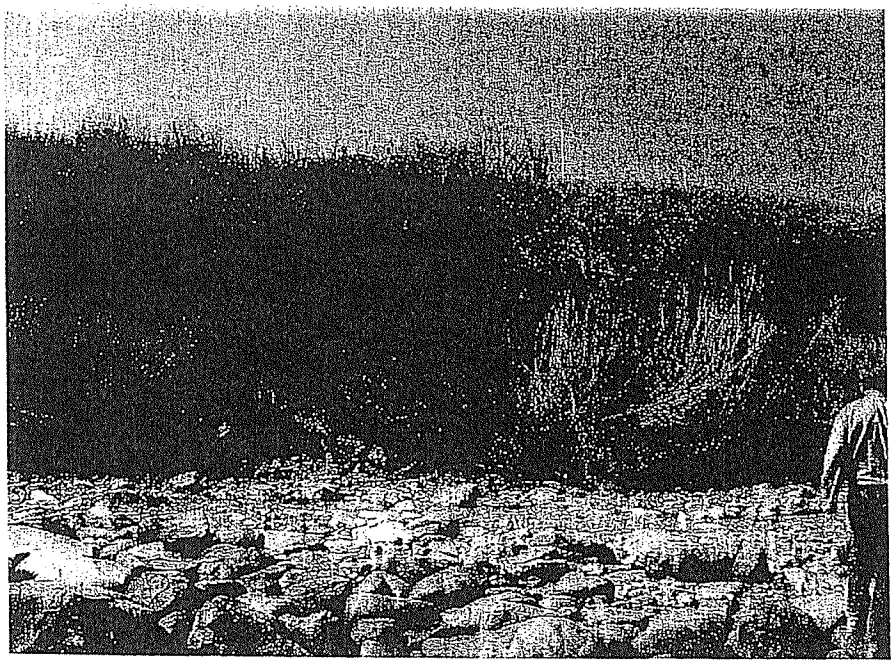
We understand that Graham Associates Inc. (GAI), are presently surveying the damaged areas. Based on these findings, additional design advancement, and formalization of permit actions required for the work can be undertaken.



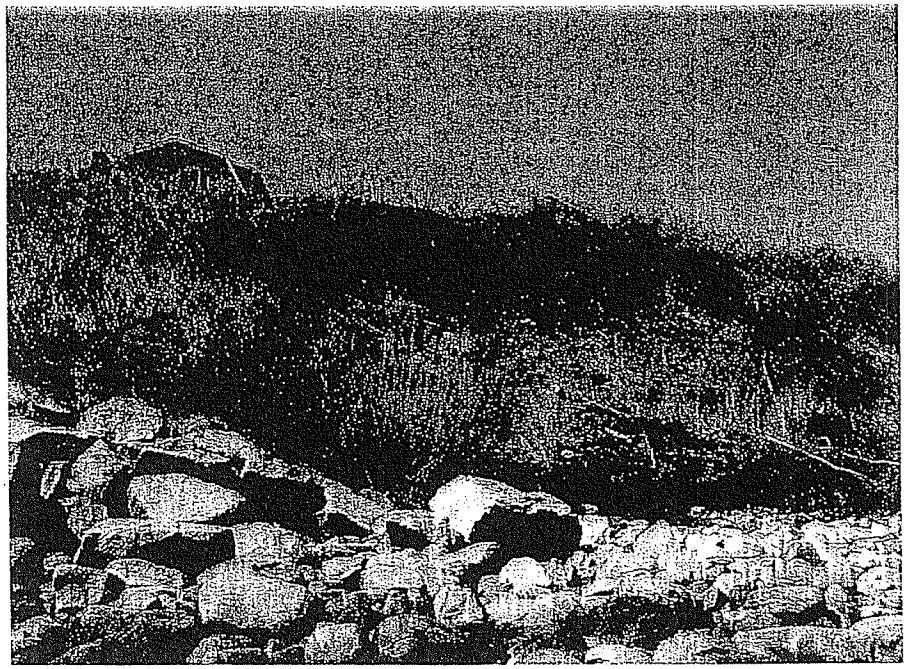
PHOTOGRAPH 1



PHOTOGRAPH 2

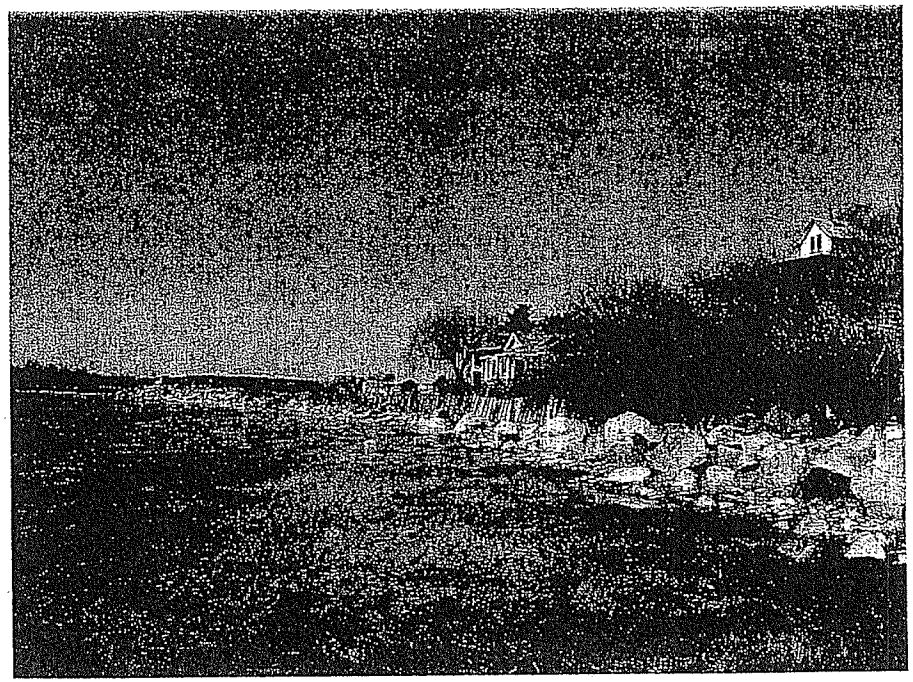


PHOTOGRAPH 3

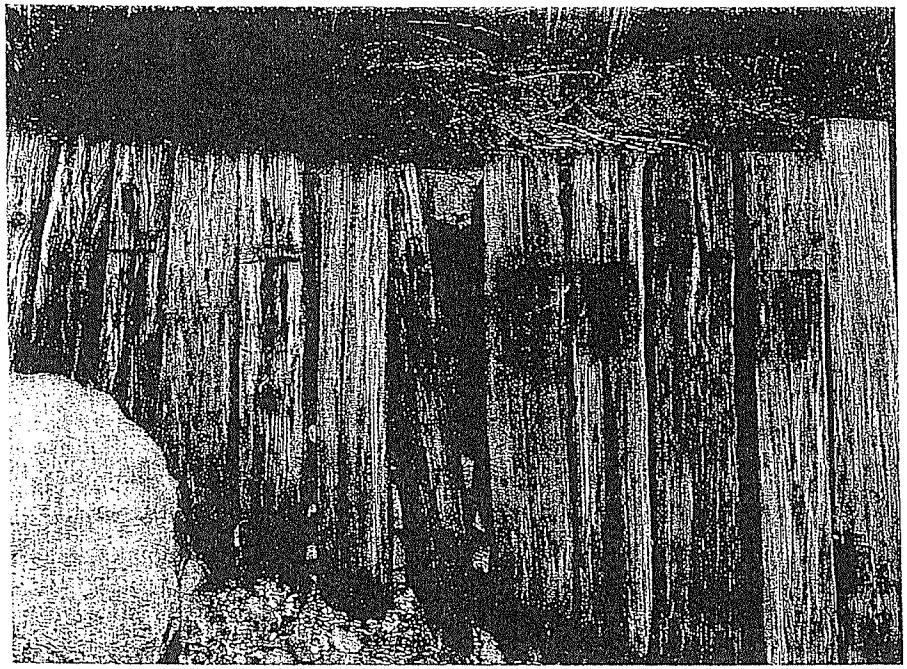


PHOTOGRAPH 4

PHOTOGRAPH 5



PHOTOGRAPH 6



PHOTOGRAPH 7

PHOTOGRAPH 8

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