



Buzzards Bay Project
National Estuary Program

Stuart Richardson
Chairman, Marion Housing Committee
PO Box 924
Marion, MA 02738

May 16, 2005

Mr. Richardson:

Thank you for your letter dated May 13, requesting the Buzzards Bay Project's review of potential environmental impacts from a proposed Chapter 40B project in the town of Marion. Specifically you requested a review of potential impacts from stormwater discharges and nitrogen loading to groundwater from the proposed construction of 28 single-family 3-bedroom houses (84 bedrooms) on an 8.67-acre parcel.

As you may know, Chapter 40B projects are exempt from local regulations and town bylaws, including local regulations and bylaws pertaining to human health and wetland protection. However, Chapter 40B projects must comply with state sanitary code (Title 5) and state Wetland Protection Act regulations.

With respect to the state Wetland Protection Act, this property appears to be more than 100 feet from any wetlands and more than 200 feet from the river. If that is the case, unless there is a demonstrated stormwater linkage (including via overland pathways) to a municipal or private stormwater conveyance system (which discharges to a wetlands or waterways), the Wetland Protection Act stormwater treatment standards do not apply¹.

The only additional standards that might apply to a Chapter 40B project under the Title 5 regulations, were if the project was located in a designated nitrogen sensitive area. Such a designation applies only to projects located in a drinking well Zone II, or if a project were in the watershed of a DEP designated nitrogen sensitive coastal embayment. For these areas, Title 5 restricts discharges to 440² gallons per acre per day, or 550 gallons per acre per day for alternative septic systems that are certified by DEP to discharge 26-ppm nitrogen or less, or 660 gallons per acre per day for alternative septic systems that are certified to discharge 19-ppm nitrogen or less. There is no volume discharge limit for alternative septic systems that are certified by DEP to discharge 10-ppm nitrogen or less, however, no technologies currently have this certification.

¹ An after the fact filing could be required if stormwater discharges do reach vegetated wetlands or surface waters. If overland runoff is expected to reach wetlands, this project would also require a Phase II NPDES stormwater construction permit from the US EPA. Work is not supposed to begin until this permit is filed.

² Under the regulations, Title 5 systems must be designed to accommodate a flow of 110 gpd for each bedroom, so these discharge limits translate to 4.5, and 6 bedrooms per acre.



These limits also do not apply if the applicant instead seeks a groundwater discharge permit, instead of a Title 5 permit. However, a groundwater discharge permit would automatically require a discharge of 10-ppm nitrogen, or possibly less, based on negotiations with DEP. The costs associated with a groundwater discharge permit may be prohibitive for a project of this size.

This site is not in a drinking water well Zone II. With respect to the nitrogen sensitive embayments section, the state has made no such nitrogen sensitive designations under Title 5, since the nitrogen sensitive embayment regulations were adopted in 1996.

The reason for the absence of nitrogen sensitive coastal embayment designations under Title 5 by DEP is due to the fact that the agency recognizes that in some estuaries, wastewater discharges may require limits well below the equivalent nitrogen loading of 440 gallons per day per acre of conventional wastewater discharges. Instead, they believe that comprehensive nitrogen management strategies must be implemented which are based upon achieving a Total Maximum Daily Load (TMDL) limit for nitrogen. Establishing these TMDLs is the goal of the Massachusetts Estuaries Project. Such strategies may include sewerage, use of alternative septic systems, and other nitrogen controls. DEP has advised municipalities to wait for the Massachusetts Estuaries Project to complete their detailed modeling and assessments of the 89 Massachusetts coastal embayments included in the program. DEP does not recommend that municipalities adopt any interim standards.

However, having noted all this, a practical challenge facing communities like Marion, is that the Massachusetts Estuaries Project evaluations of some embayments, like the Weweantic River drainage basin, may not be complete for several years to come. Water quality in some embayments is already degraded in the river, and new development will not wait for DEP to complete the MEP study. Of course municipalities can adopt their own nitrogen-loading limits using local bylaws (e.g. Falmouth does this), based upon the best available information, but these locally required limits do not apply to Chapter 40B projects.

One action never taken by municipalities since the 1996 re-write of Title 5, is to formerly DEP to make such a nitrogen sensitive embayment designation under the Title 5 regulations. Such a request should include evidence that water quality of the receiving waters is already degraded. In the case of a watershed like the Weweantic River, where zoning is already greater than one acre through most of the watershed, such a designation would have little effect on development, with the exception of Chapter 40B projects and commercial development generating wastewater volumes greater than 440 gallons per day per acre. Some unbuilt residential lots may also be affected, if the lot is smaller than one acre. These grandfathered lots might also be required to install nitrogen removing septic systems, or have limits on the number of bedrooms at the time of construction to conform with the 440, 550, or 660 gallons per day per acre (4.5, or 6 bedrooms per acres) standards depending upon the use of conventional or alternative septic system technologies.

In a practical sense, in the case of an 8.7-acre parcel like the one you describe, a nitrogen sensitive area designation would require fewer units than the 28 houses and 84 bedrooms

proposed. First, if conventional septic systems are installed, the parcel could not exceed 440 gallons per acre per day, which would limit the site to 34 bedrooms, or 11 three-bedroom houses (one with an extra bedroom). If a nitrogen removal system were installed with a performance comparable to a recirculating sand filter (and thus allowing 550 gallons per day per acre), the property would be permitted to have 43 bedrooms, or 14 three -bedroom houses (one with an extra bedroom). For nitrogen removal septic systems that allow a discharge of 660 gallons per day per acre by the state, 52 bedrooms would be allowed, or the equivalent of 17 three -bedroom houses (with one extra bedroom).

Because these nitrogen reduction systems would be installed to comply with Title 5 regulations, each system must have an operation and maintenance contract in place, and its nitrogen reduction performance must be reported to DEP. Confronted with additional costs for installing, operating and maintaining these nitrogen removing septic systems, there is a strong possibility that the applicant will elect to install a single small community or package wastewater facility for the development. In this scenario, all the homes would likely be connected to this wastewater treatment facility by a “step” sewer system.

Such small wastewater facilities are more consistent in their performance than single-family units, because of the steady average wastewater flow from the many houses connected to it. A single community wastewater treatment system could be more easily upgraded to conform to a nitrogen TMDL limit identified by DEP, than it would be to retrofit 28 individual units. These community wastewater facilities can be less costly to install than multiple alternative septic systems for each unit because only a single larger treatment unit, and a single larger leaching field (on a set aside parcel) would be required.

If the town were to consider pursuing such a nitrogen sensitive embayment designation, a request from the town might look like this:

“The Marion Board of Selectmen requests MA DEP assistance with the designation of nitrogen sensitive areas within selected areas of the town. More specifically the Board of Selectmen and Board of Health wishes to have Hammets Cove, Weweantic River, Aucoot Cove, and Sippican Harbor designated as Nitrogen Sensitive Embayments under The State Environmental Code, Title 5, 310 CMR 15.000, Section 15.215 (2). We understand that designation of these Nitrogen Sensitive Embayments would result in wastewater discharge limitations as required in Section 15.214 (1-3).

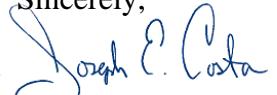
While we understand the DEP is working on a long-term project with the University of Massachusetts, School for Marine Science and Technology to identify the specific loading limitations and other measures that will be protective of these embayments, the Board wishes to take more rapid interim action that would at least limit the wastewater discharge volume to that identified in Title 5 for Nitrogen Sensitive Areas. We believe adequate information and scientific evaluations exist for such designation based upon the Coalition for Buzzards Bay Baywatchers Report which documents more than ten years of water quality monitoring results, as well as the Buzzards Bay Project’s report “A Buzzards Bay Embayment Subwatershed Evaluation: Establishing Priorities for Nitrogen Management Action.” The Baywatchers Report identifies Hammett Cove and the Weweantic River as having poor water quality and eutrophic conditions, and Aucoot

Cove and Inner Sippican Harbor as having fair to poor conditions. The Buzzards Bay Project's report delineates the watersheds that contribute to each of these embayments, and therefore the area within which the nitrogen limitations should apply."

Because such action has not been taken previously, we cannot predict the outcome of making such a request to DEP.

I hope you find this information helpful.

Sincerely,

A handwritten signature in blue ink that reads "Joseph E. Costa".

Joseph E. Costa, PhD
Executive Director