

Karla L. King

From: Stephens, Harold (DEP) <harold.stephens@state.ma.us>
Sent: Thursday, September 13, 2012 2:32 PM
To: Ian B. Catlow
Cc: Brander, Kevin (DEP); fturkington@wayland.ma.us; Karla L. King; Worrall, Eric (DEP)
Subject: Wayland/Town Office Discharge Site

Categories: Wayland

Ian;

Kevin Brander and I have completed our review of the additional information you provided for the proposed groundwater discharge at the Town Office Site in Wayland, Massachusetts. The following are our comments and concerns regarding your submittal:

- The additional test pitting and percolation testing provided adequately characterize the near surface, unconsolidated sediments found at the proposed discharge location.
- We concur that the mounding analysis method employed is acceptable to MassDEP, however we noticed that several of the input aquifer parameters employed in the most recent mounding analysis differ from the values determined in the initial hydrogeologic report; specifically hydraulic conductivity was initially determined to be 76 feet/day and a value of 0.12 was assigned to specific yield. These values in the latest mounding analysis have been revised to 57 feet/day and 0.24 respectively. While these changes do not significantly alter the results of the mounding analysis, what is the rationale behind the change?
- Tighe and Bond (T&B) has determined that the aerial extent of groundwater mounding at the proposed location will be limited to 37 feet from the edge of the SAS and will not have a negative impact on the basements and septic systems of abutting properties. Kevin and I are concerned about the appropriateness of the method employed to evaluate the aerial extent of mounding and potential impacts to below grade structures and foundations. Bouwer (Hydrogeology Journal; 2002; 10:121-142) states that the method employed by T&B is appropriate when evaluating rectangular recharge basins where the length of the basin is **at least** five times the width. The length to width ratio of the proposed SAS is, however, less than half that required by Bouwer for this method.

In the same paper Bouwer proposes an alternate method for evaluating round, square or irregular shaped basins that can be represented by an equivalent circular area. While the proposed basin is not a square, its shape is arguably closer to this geometry than that of the method employed. Keeping all other parameters the same, the limit of mounding influence determined by using this method ranges from 122 feet (using a radius value of 85 feet; equal recharge area) to 369 feet (using a radius of 50 feet; half of the width of the proposed SAS). Both of these values extend mounding impacts well beyond the distance of the nearest abutting structure located approximately 50 feet north of the proposed discharge.

Given the site's shallow depth to groundwater, relatively flat water table (hydraulic gradient of approximately 0.005 ft/ft) and close proximity to abutters north of the proposed discharge, MassDEP requests that T&B reassess how abutting foundations, basements and septic systems will be impacted by the proposed discharge. MassDEP recommends that T&B contact the Wayland Board of Health to obtain all available information regarding the location and construction of septic systems, depths to groundwater and history of wet or flooded basements for all abutting properties located north and east of the proposed discharge location. T&B

must adequately evaluate and assess potential hydraulic impacts to abutting sensitive receptors before a site approval letter can be issued by MassDEP.

- MassDEP has completed its review of the proposed increased loading rates for drip dispersal. A decision has been made to increase the maximum loading rate for drip dispersal to 1.5 gpd/sf. If the area between drip lines is to be designated as reserve area, then the minimum spacing between drip lines remains 4 feet on center. Also, MassDEP has allowed a 50% reduction in reserve area for projects which utilize an MBR or equivalent technology. You are welcome to revise your application if you desire to reflect this change.

Please contact either myself or Kevin Brander if you have questions or comments regarding the above.

Criss

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