M E M O

Date: July 9, 2004

To: Wayne Davies, Hopkinton Board of Appeals

From: Jesse Schwalbaum, Earth Tech

CC: Dick Jubinville, Earth Tech

Subject: Groundwater Mounding Simulations for Proposed MRRF Facility

As you requested, Earth Tech has been working with Brown & Caldwell to address some issues and concerns relative to the groundwater mounding analysis that was done for the proposed MRRF facility at the old Hopkinton Landfill. The original analysis was included in a report from Brown & Caldwell entitled "Simulation of Groundwater Mounding in the Vicinity of Storm Water Runoff Infiltration Basins, Former Hopkinton Landfill, Hopkinton, Massachusetts" dated June 2004.

Earth Tech's initial comments on the report were included in a memorandum dated June 16, 2004. It was our opinion at that time that the analysis presented in the report was not adequate to address the standard set in the Water Resources Protection District Bylaw with respect to potential impacts. The concern is whether potential groundwater mounding could raise water levels beneath the landfill and generate additional leachate.

Since that time, we have been working with Brown & Caldwell to develop a scope of work to address the concerns raised in our memo. The primary difficulty has been that, in my opinion, there is insufficient data on which to base a meaningfully accurate groundwater flow model of the site vicinity. There is too much uncertainty about the most important model parameters (primarily hydraulic conductivity of the subsurface materials). The approach, therefore, has been to use the model to simulate a wide range of potential conditions. If it could be demonstrated that there are no likely aquifer conditions that would result in unacceptable groundwater mounding, then the model can be used to justify the assertion that there will be no impacts in spite of the uncertainty in the aquifer parameters.

At this point in time, Brown & Caldwell has conducted a significant number of model simulations using a wide variety of assumptions. None of these simulations, by themselves, can be considered to be an accurate depiction of the groundwater conditions at the site. However, taken as a whole, these simulations provide data on the range of groundwater mounding that can be expected as a result of potential stormwater discharge at the site. Based on these results, it is possible to make the following conclusions:

1) Potential groundwater mounding from the discharge of roof top runoff in the area just north of Wood Street will not significantly raise water levels beneath the landfill and therefore will not result in additional leachate generation.

2) Potential groundwater mounding from the stormwater basin to be located west of the landfill will not significantly raise water levels beneath the landfill as long as there is a liner beneath the basin equivalent to a one-foot thickness of material with a hydraulic conductivity of 1×10^{-6} cm/s.