



GEOHYDROCYCLE, INC.

HAZARDOUS WASTE
WATER SUPPLY

ASSESSMENT
REMEDIATION
ANALYSES
PERMITTING
MODELING
SOFTWARE

May 14, 2015

Mr. Steven Ventresca, P.E.
Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

re: NGI Report dated May 4, 2015
Brem Property
100 Long Ridge Road
Carlisle, MA
GHC #14015

Dear Mr. Ventresca:

GeoHydroCycle, Inc. (GHC) is in receipt of a copy of the Northeast Geosciences, Inc. (NGI) report entitled *Groundwater Impact Analysis - Response #1, Brem Property*, 100 Long Ridge Road, Carlisle, MA, dated May 4, 2015. This letter presents a summary of GeoHydroCycle's review of this report along with our comments and recommendations.

1. For each of the paired wells NGI provided only one log. GHC recommends submitting logs for each of the paired wells.
2. Responses #2 and #3 answered GHC's questions concerning groundwater levels were determined.
3. Mottling depths are related to the ground surface, which is subject to erosion over time, making the depth measurements subjective. GHC recommends determining seasonal high groundwater would be to plot the January water table, note the differences at the test pit locations, and apply those differences to the groundwater levels.
4. Responses #5 and #6 answered GHC's questions concerning the saturated thickness was determined and used in the test analysis.
5. There was no description of "stratified drift" or "alternative layering of coarse and fine materials" in the NGI well logs. The logs describe the soil as "till", which is an unsorted material showing no stratification. GHC recommends a recalculation of the Hvorslev hydraulic conductivity tests.
6. The differences in the hydraulic conductivity between 7.4 and 9.0- feet per day may appear small, but GHC's mounding calculations show that the use of a value of 7.4 feet per day could result in a mound 0.40 feet higher at septic fields

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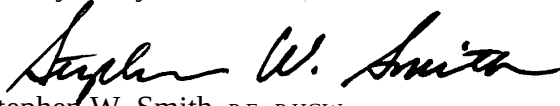


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- #2 and #3. GHC recommends calculating the septic field mounds using a hydraulic conductivity of 7.4 feet per day.
7. The 90 day mounding time represents a condition where the mound has reached steady-state mound height, and does not relate to the length of time seasonal high groundwater occurs. Using site data, a groundwater mound calculated at 90 days is 0.5 foot higher than a mound calculated using 30 days. GHC recommends that the groundwater mounding calculations be run using the MassDEP Guidelines¹ specified 90 days.
 8. Responses #11 answers GHC question concerning storm water under existing site conditions.
 9. The mass-balance nitrate calculations are a requirement of Title 5 under 310 CMR 15.214(2).
 10. The use of a retardation factor in the transport analysis causes loss of nitrates along the flow field. GHC recommends a conservative advection dispersion transport analysis with no retardation of nitrate.
- If you have any questions, please call me.

Sincerely,
GeoHydroCycle, Inc.



Stephen W. Smith, P.E., P.HGW.

GHC Com & Rec 5-15-15.lwp

¹ Massachusetts DEP. November 2014. *Guidelines for the Design, Construction, Operation, and Maintenance of Small Wastewater Treatment Facilities with Land Disposal.*