



**Environmental Consulting**

**Engineering**

**Construction Management**

**Hagerty Environmental, LLC**

- Professional Engineer Licenses: DE, MD, MO, NJ, PA, VA  
- Professional Geologist License: DE  
- PA Certificate of Organization #3245948  
- DE Engineering Certificate of Authorization #2732  
- NJ Engineering Certificate of Authorization #24GA28139000  
- VA Engineering Certificate of Authority #0407 005230  
- MO Engineering Certificate of Authority E-2012010543

VIA ELECTRONIC MAIL ([tstarosta@pa.gov](mailto:tstarosta@pa.gov))

May 24, 2013

Mr. Thomas Starosta  
Pennsylvania Department of Environmental Protection  
Bureau of Point and Non-Point Source Management  
Division of Planning and Permits  
P. O. Box 8774  
Harrisburg, PA 17105-8774

**RE: PADEP Draft Technical Guidance - Onlot Sewage Systems in HQ/EV  
Watersheds (385-2208-001)  
Hagerty Environmental, LLC Comments on Draft Guidance**

Dear Mr. Starosta:

Hagerty Environmental, LLC (Hagerty) has reviewed the referenced draft technical guidance document and respectfully submits the following comments for the Pennsylvania Department of Environmental Protection's (PADEP) consideration and response:

1. Section V(5), third bullet - Please clarify and provide rationale for the 50 foot isolation distance. If it is acknowledged that the absorption field yields unwanted nitrate to the soil and groundwater, then wouldn't it be more prudent to install the permeable reactive barrier (PRB) as close as possible to the source?
2. Section V(5), sixth bullet - Please clarify or define what is meant by "pH-stabilized substrate." Is PADEP suggesting that organic substrates should be augmented with a buffering agent, or does PADEP mean that the organic substrate should not have inherent qualities that would biologically generate excessive acidic conditions (e.g., high labile carbon, excess fermentability)? If the former, please provide specific buffering parameters in the guidance.
3. Section V(5), seventh bullet - Please provide rationale for the minimum 5 day hydraulic retention time and clarify whether this is an empty bed retention or a retention taking into account porosity (total and effective).
4. Section V(5), Rationale, second and third paragraphs - Please provide support for why PADEP expressly authorizes vertical configurations but not horizontal. Vertical barriers are not a PADEP-certified sewage treatment technology (by NSF, DEP Technology Verification Protocol, etc.), therefore, it is unclear why vertical is approved but not horizontal. Ample evidence exists for the efficacy of horizontal configurations, including references in the draft document itself (e.g., Robertson et al. 1995; Robertson et al. 2000) and additional technical papers to be submitted to PADEP under separate cover. In the context of groundwater protection, and acknowledging that PADEP accepts the fundamental efficacy of organic-based denitrification treatment, the horizontal

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configuration would be more protective since treatment (denitrification) occurs directly at the nitrate source, as opposed to a minimum of 50 feet downgradient and only after the nitrate-laden effluent has entered groundwater.

We appreciate your consideration of these comments and look forward to PADEP's responses.

Respectfully,

*HAGERTY ENVIRONMENTAL, LLC*

A handwritten signature in black ink, appearing to read 'PAH', is written over a horizontal line. The signature is stylized and somewhat cursive.

S13.1435

Paul A. Hagerty, P.G., P.E.

Principal Engineer