Groundwater Nitrate Monitoring and Management

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Elevated nitrate in groundwater is a common problem in agricultural regions with heavy fertilizer use. Excess nitrate consumption is linked to methaemoglobanaemia (i.e., "blue-baby syndrome") in infants, and potential carcinogenic effects. Typical treatments for nitrate removal are expensive and difficult for small-scale systems to implement.

PROJECT OBJECTIVES

1. Determine extent of nitrate contamination in a small community in the Annapolis Valley
2. Investigate low-cost, low-maintenance nitrate removal treatment technologies

GROUNDWATER SAMPLING

- Bi-weekly sampling from June 2016 to September 2017
- Sample locations at 5 groundwater well locations, 2 distribution system locations and the water supply inlet and outlet
- Samples tested for nitrate using ion chromatography.

LABORATORY TESTING

Bench-scale testing is being conducted on biofilters, which use denitrifying bacteria to reduce nitrate (NO_3) to molecular nitrogen (N_2).

Cellulosic agricultural waste products, such as corn stalk, will be used as a carbon source for the bacteria and compared to more traditional feedstocks, such as acetate.

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