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Simultaneous use of natural attenuation and permeable reactive barrier in nitrate contaminated groundwater

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Since the implementation of the Law on Promoting Proper Management and Use of Livestock Excreta in 1999, the number of the farmers that do not meet the management criteria is on the decline. However, there is a possibility that many of the animal waste disposal pits that have been either abandoned or refilled according to the law have been the potential contamination source.

In this study, we discussed the possibility of simultaneous use natural attenuation and permeable reactive barrier in nitrate contaminated groundwater. As a result, after 55 days from the startup of the experiment, the nitrate concentration decreased from 151 mg/L (upstream observation wall) to 0 mg/L inside the permeable reactive barrier.

Keywords: groundwater, NO₃⁻, permeable reactive barrier, natural attenuation, denitrification, animal waste