
Abstract: Vegetative filter strips are commonly used as a best management practice to control agricultural pollution. This study investigated the relationship between flow pattern and removal of dissolved phosphorus (P) within vegetative filter strips treating milk house wastewater on two dairy farms located in the Catskills/Delaware watersheds, which are the source of drinking water for New York. Numerous surface and subsurface wells were monitored in the two vegetative filter strips, and chloride tracer was applied to evaluate flow paths. Soluble reactive P concentrations were measured during regular milk house wastewater discharges prior to and during chloride application. Chloride breakthrough showed wastewater flowing preferentially through the vegetative filter strip. The soluble reactive P concentrations were significantly higher within the preferential flow paths compared to the other less saturated parts of the vegetative filter strip. Removal of soluble reactive P was minimal in a saturated flow path, which persisted for 15 m (50 ft) and only began to occur as the wastewater eventually dissipated into drier soil areas. Although soluble reactive P concentrations were eventually reduced to below 0.2 mg L-1 (0.2 ppm) at the bottom of both vegetative filter strips, these results suggest the importance of proper design, site and location characteristics, and maintenance to assure uniform distribution and infiltration of wastewater within the vegetative filter strip to maintain effectiveness and prolong the life of the vegetative filter strip.