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**Application of Microfiltration for the Treatment of Marcellus Shale Flowback  
Water: Influence of Floc Breakage on Membrane Fouling**

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**Abstract**

Management of Marcellus Shale flowback water is a rising concern in Pennsylvania. Due to limited capacity for wastewater disposal by deep well injection, flowback water reuse is the dominant management option in PA. Microfiltration is a promising technology to be used in a mobile treatment system for solids removal from Marcellus Shale flowback water prior to reuse. It was found previously that early Marcellus shale flowback water could cause severe membrane fouling due to the presence of stable submicron colloids. Bench-scale cross-flow filtration system was used in this study to evaluate feasibility of microfiltration for treatment of Marcellus Shale flowback water that does not contain these submicron colloids. The performance of

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