

Ultrafilter Pilot Study

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The sewer authority’s modified NPDES discharge permit is expected to have more stringent metals limits on the municipal separate storm sewer system (MS4). In anticipation of the new limits, Norfolk Southern embarked on a program to improve their wastewater pretreatment system, including the evaluation of alternate treatment technologies such as ultrafiltration, prior to releasing the water to the MS4. After conducting a three-month pilot study from April to July 2015, it was concluded that ultrafiltration technology is effective in achieving very low effluent concentrations of suspended solids, oil and grease, and metals, using less chemicals than the physical/chemical treatment system, and producing significantly less sludge for disposal.

The ultrafiltration system was demonstrated to provide superior effluent quality compared to the facility’s physical/chemical treatment system, with complete removal of suspended solids, emulsified oil and grease, and precipitated metals. High concentrations of emulsified oil and grease in the facility’s oil/water separator effluent proved to be easily removed by the ultrafilter, with effective cleaning and good recovery of membrane flux after each batch-down.