

AN ABSTRACT OF A THESIS

**PERFORMANCE COMPARISON OF MEMBRANE FILTRATION
TO CONVENTIONAL WATER TREATMENT**

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Results from a pilot study at the Duck River Utility Commission Water Treatment Plant in Tullahoma, TN comparing conventional treatment to microfiltration (MF) and ultrafiltration (UF) are reported. Testing parameters for the pilot study included: total organic carbon (TOC), dissolved organic carbon (DOC), UV_{254} , trihalomethane formation potential (THMFP), particle count, turbidity, iron, manganese, and total coliforms. The Environmental Protection Agency's (EPA) current and anticipated water quality regulations and the tested systems' abilities to meet these regulations, relative to the parameters tested, are discussed.

The data showed that both membrane systems provided excellent removal of turbidity, particle counts, and total coliforms regardless of the type of pretreatment used. However, the removal efficiency of TOC, DOC, UV_{254} , and THMFP varied with the type of pretreatment used. The conventional system also provided good removal of turbidity, but did have significantly more particles in the effluent. The conventional system showed a higher removal of TOC, DOC, THMFP, and UV_{254} . Iron and manganese effluent concentrations were below 0.3 mg/L and 0.06 mg/L respectively for each membrane system and the conventional plant.