



Municipal Drinking Plant:
Lake Michigan water treated through FiberFlex™
system then sent for distribution

APPLICATION: Municipal Drinking Water

CAPACITY: 90,000 GPD

LOCATION: Northport, Michigan, USA

COMMISSIONED: 2017

CHALLENGE

The Northport Cottage Owner's Association (NPCOA) were faced with the challenge of constructing a new potable water treatment facility to meet the latest, more stringent, drinking water quality regulations. The new plant was to treat water from Lake Michigan. Due to its relatively small customer base and availability of operations staff, the new facility required a high degree of automation and customization. Treated water quality requirements for the new plant included a minimum LRV score from daily Membrane Integrity Tests of 4.3 log for the membrane system and a treated water turbidity of less than 0.1 NTU, 95% of the time.

SOLUTION

Following a public bidding process with different membrane system suppliers, an extensive evaluation was conducted by the Consultant and the Owner and H2O Innovation, using Toray's HFU-2020N modules, was selected to provide two, 100% ultrafiltration treatment trains including such ancillaries as feed pumping, automatic strainers, backwash and CIP systems, chemical feed skids and compressed air equipment.

Due to the seasonal nature of the customer service base, the system was designed to handle a wide fluctuation in treatment demands, ranging from a low of 13,000 gallons per day, to a peak production of 90,000 gallons per day.

Two fully independent UF treatment trains were supplied, ensuring full redundancy of all critical unit treatment processes and equipment.

Raw water from Lake Michigan can be characterized as having low color and low TOC, alkalinity of 100 mg/L, temperature as low as 33 degrees Fahrenheit and turbidity averaging 3 NTU. Raw water is pumped from Lake Michigan to the new treatment facility where feed water pressure is boosted and then fed into automated strainers. From there, water is filtered through the UF membrane system. Following the UF membranes, the water is then chlorinated for final disinfection and then pumped to a treated water storage tank before being sent to NPCOA's distribution system.



FiberFlex™ System in Northport Point, MI



BUILT WITH FIBERFLEX™

The FiberFlex™ UF system supplied for the NPCOA is a universal membrane system designed to fit several different modules from membrane manufacturers. This gives the Owner ultimate flexibility and negotiating power in the future when the time comes for membrane replacement.

The skidded UF membrane racks and control systems were fully factory assembled and tested at H2O Innovation's manufacturing facility to ensure minimal installation labor and time required on-site for system start-up and commissioning. Once the racks were brought into position and connected, the Toray HFU-2020N membrane modules were installed, flushed and integrity tested.

In the future should the owner elect to change the type of membrane module, operating parameters such as air scour rates, backpulse flows, system cleaning volumes and various chemical recipes are simply changed by the operator at the HMI without requiring additional programming when modules are changed.

RESULTS

The FiberFlex™ UF membrane system was commissioned in late 2017 and since then has provided superior filtered water quality that meets and exceeds the most stringent regulatory requirements.

All sequences, including backwashing, daily Membrane Integrity Tests (MITs), maintenance cleaning and recovery cleaning are fully automatic for easy operation. Events such as the MITs and chemical cleaning/ neutralization are easily scheduled by the operator using the main control panel's HMI.

The new treatment facility for the NPCOA was the first municipal potable water treatment plant permitted in the State of Michigan that does not require operators to be present 24 hours per day. This is a testament to the robust controls system and the reliability of the highly automated treatment process.



FiberFlex™ UF membrane system