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MEMBRANE FILTRATION RELIEVES WATER PRESSURES

Washington City had a problem: the City's rapid growth rate was causing a shortage of water source supply. The current well fields were struggling to keep up with the peak water demands that increased each summer. Because of the recent drought, residents actually conserved substantial amounts of water. However, the increased demand from the growth rate was more than decreased demand provided by conservation. During the summer months the City staff would anxiously monitor the water tank levels and pray for cooler weather.

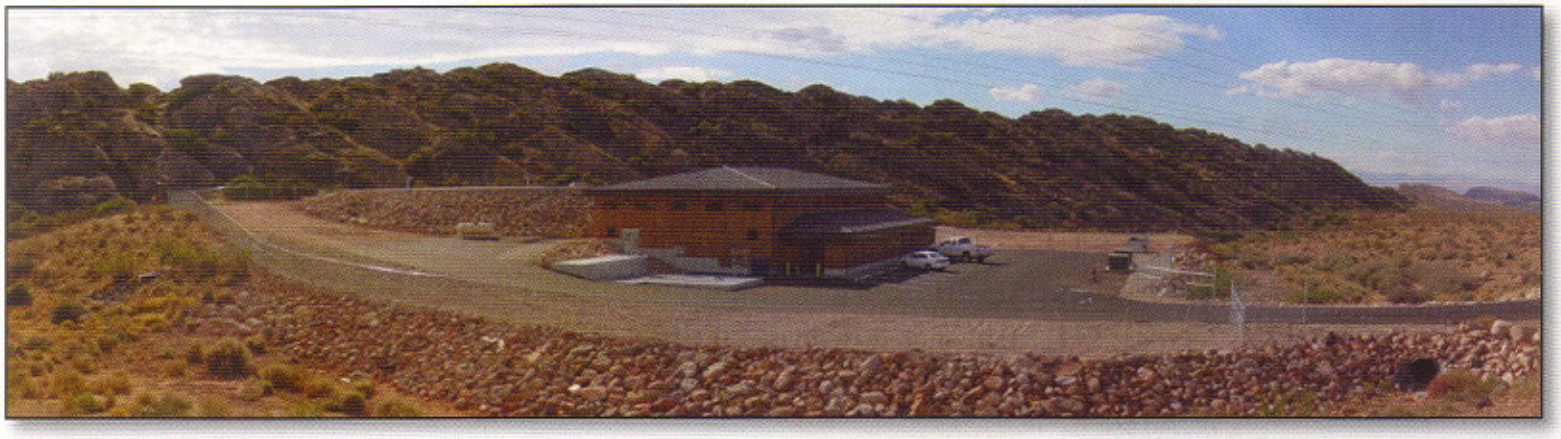
Washington City is home to about 10,000 people and experiencing rapid growth. Over a decade ago the City leased 2000-acre feet per year of secondary water from the Washington County Water Conservancy District. The City was only using about 600 acre feet of this amount for golf course irrigation.

Additional source capacity was needed so a new system had to be put in place. A membrane filtration plant was considered a feasible solution to utilize the water Washington City was already paying for from the Conservancy District, and to resolve the increasing deficit of source capacity they were experiencing.

What is a Membrane Filtration Plant? Membrane filtration is a technique that provides a separation process making an absolute barrier for removal of all contaminants larger than the membrane pore size. Membrane Filtration is a fairly new development in the water treatment industry, but the technology has been gaining momentum as a viable alternative in both water and wastewater treatment in recent years.

Anytime conventional surface water treatment is being considered, membrane filtration is a possible option. There are different types of membrane filtration plants; reverse osmosis, nanofiltration, ultrafiltration, and microfiltration. Reverse osmosis is very expensive and results in a substantial amount of wasted water. It is however, the most effective as it will remove all solids, including suspended and dissolved. Reverse osmosis can be used to purify sea water into potable water and has a pore size of less than 0.001 microns. Ultrafiltration and nanofiltration are next in both effectiveness and expense, and will

continued, page 2...



A panoramic view of the finished Microfiltration Plant

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IN THIS ISSUE

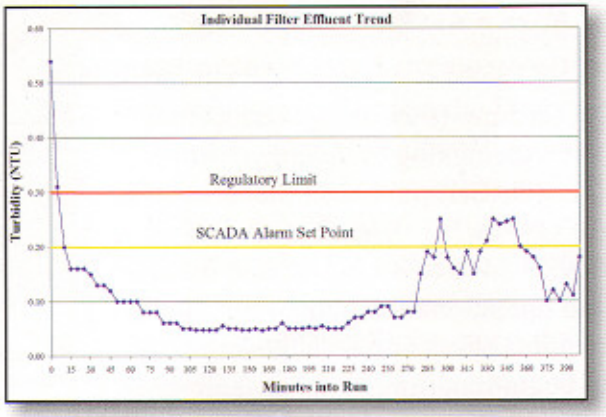
SCADA can help with new EPA rules

Beginning January 2004, all surface water treatment plants serving less than 10,000 people will have to comply with the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) put in place by the EPA. This rule is part of the Disinfectant-Disinfection-By-Product bundle of rules which will affect all size drinking water facilities, both surface and ground water over the next decade.

The LT1ESWTR is lowering turbidity limits on the combined filter effluent, and is beginning monitoring of individual filters. Not only have the limits been lowered, but the frequency at which measurements must be taken has increased from every four hours to every 15 minutes.

To effectively comply, utilities will need on-line turbidity meters and equipment to continuously record results. Most plants will also need to optimize their unit processes (coagulation, flocculation, sedimentation and filtration) to comply with new regulations.

Many utilities are turning to SCADA to assist with the ever increasing EPA regulatory requirements. A system can be put in place to monitor and record turbidities continuously. Automation of state issued reports can be implemented to simplify the reporting process, and early warning alarms can also be achieved by a SCADA system. This can be used to alert an operator (via autodialer, e-mail, etc.) of an impending rise in finished water turbidity levels.



A sample of a filter run charting effluent turbidity

Alarm levels for other processes, such as loss of chemical feeds or drop in chlorine residuals, can also be created. The system can also be used to monitor chemical dosing and record that information for analysis later. Optimization of each process can be achieved to help the plant reach its water quality goals and help lower the Total Cost of Ownership.

As the need to meet the new and increasing demands for safer drinking water continue to strain the resources of utilities, new ways to help are needed. A SCADA system can help a utility meet these demands head on.