City of Moline, Illinois

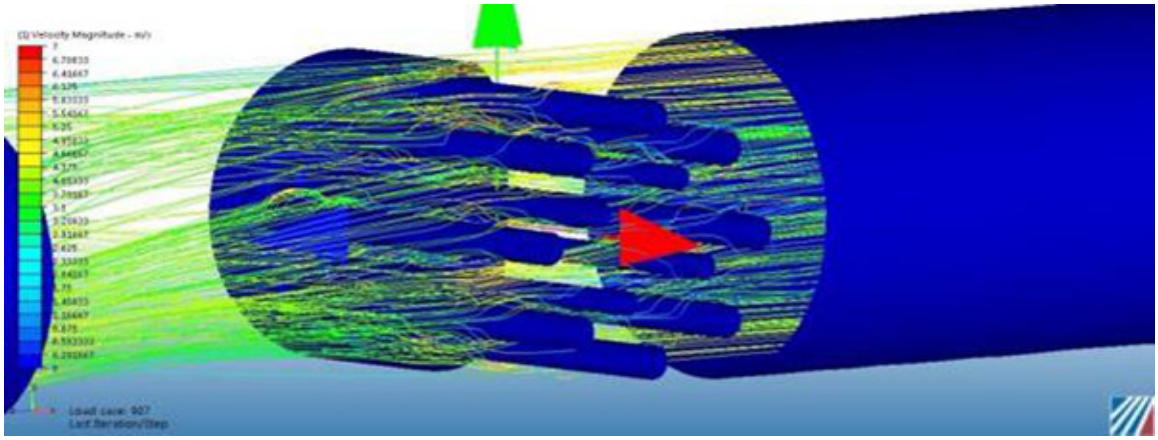
A Drinking Water Installation

History

The City of Moline is now adding validated UV systems to provide an additional barrier for the filtered water, which will improve water quality and ensure that none of the chlorine tolerant organisms such as Cryptosporidium is present. The City of Moline is located in the heart of the Midwest, tucked between the banks of the Mississippi and Rock River in Rock Island. Moline is one of four cities that make up the Quad Cities that include Rock Island, Illinois and Bettendorf and Davenport Iowa.

Agricultural Roots

The Water Division provides continuous high quality, water and services to approximately 43,000 people that call Moline home. The Water Division utilized the Mississippi River as its source to treat, pump, and meter water to over 17,000 homes and businesses. The variable quality of the water in the Mississippi source poses unique challenges to the Water Division, and the high levels of agricultural run off into the river means that the Water Division must assume that threat could be present, and take steps to protect the consumers. The City's drinking water supply system requires more than 5 million gallons of water on the average day and the system must function dependably and continuously to protect the public health and to support the standard of living and local economy.



Future Growth

Whilst the filter loading rates are approved to 5gpm/ft^2, which equates to approximately 3MGD per filter, the filters are run at reduced loading rates that equate to 0.8MGD to 1.3MGD. It is anticipated that each filter will run up to 2MGD to allow for future growth. The filters are operated in variable mode to maintain head level in the treatment plant to allow the production rate to match the city demand.

UV technology was selected as the best available disinfection technology, and Neptune Benson's ETS-UV was chosen as the successful supplier of the equipment.

A total of 8 ETS-UV systems have been supplied, and are now being installed into the existing filter gallery. When low (70%) water transmittance levels are recorded, all 8 UV systems will operate. When the water quality

improves to a transmittance of 80%, then 6 UV systems will operate at an average flow rate of 1.2MGD. The systems are designed and their performance has been independently validated to achieve a 2.5 log removal of Cryptosporidium.

Space Considerations

As is often the case with drinking water filter galleries, space was very tight. The design of the manifold pipe work to house the UV system was a concern, as was the location of a butterfly valve. To understand the impact of the design of the installation on the performance of the UV system, ETS carried out extensive CFD modeling to demonstrate that the UV system would match the performance of the validation when installed.

ETS also provided a lot of technical support to the Water Division, and liaised with the Illinois EPA to demonstrate compliance and answer various questions that the Primacy Agency raised.

> Commenting on the support, Greg Swanson stated **"**We were impressed with the ability of the ETS technical group to explain and communicate complex subject matter in a straight forward fashion, and their can-do attitude. We take our responsibility as a provider of safe drinking water very seriously, and are happy to be working with ETS**"**

The systems are currently being installed at Moline and will be commissioned in phases in the next few months. The ETS UV systems use automatic wipers, and have sealed, non adjustable UV sensors. The control enclosures are controlled locally and also thru the plant SCADA.