

CITY OF BATAVIA

Water Treatment History

Since 1895 Batavian's have had a Public Water Supply. In the early days deep wells drilled 1,500 – 2,000 ft. deep supplied water to the community. While Batavia's original deep well, located along the banks of the Fox River, is capped off and sealed, other old deep wells dating from 1915 can still be operated.

As Batavia has grown and improved the quality of life for the City's residents during the past 100+ years so has the water system. Initially, in the 1890's, Batavia's citizens were anxious to establish a water supply for fire protection. That initial goal is still the top priority for the City's water supply, to protect people and property from the hazards associated with a fire. Additionally, we have a responsibility to provide safe drinking water and sufficient quantities of water for sanitary usage.

For the first 100 years of operation the wells only had to be pumped and chlorinated before the water was distributed to our customers. Today's regulations necessitate greater control of the quality of the finished product.

The water we drink today still comes from the deep underground aquifers used for more than 100 years and additionally from the shallow water aquifer. Today's drinking water is filtered, chlorinated, fluoridated and corrosion inhibitors are added to prevent corrosion in plumbing systems. Naturally occurring radium, found in the deep wells, is also regulated and must meet the Federal EPA's threshold of 5 pCi/L at the customer's water tap.

The City is fortunate to be able to geographically straddle both the deep well water and shallow well water aquifers. The utilization of both underground aquifers insures that the City will have a more reliable source of water for future generations.

In addition to the new and improved Water Treatment Plant, the City has also made improvements to the underground network of distribution and transmission water pipes, added new water towers and installed a new pumping station. During the past three (3) years the City has spent nearly \$17 million to comply with the Radium regulations and provide these major capital improvements.

Below is a brief description of some of the City's facilities found at the Central Water Treatment Plant located on Fabyan Parkway.

PLANT NO. 1



Plant No. 1 was placed in service in the early 1990's to utilize the shallow water aquifer and blend water back into the west side of Batavia. The facility helped keep up with the demand of our rapidly growing City.

Plant No. 1 was originally supplied with three (3) shallow wells and was capable of pumping approximately four (4) million gallons per day.

The original plant was converted in 2005 to the radium removal facility utilizing HMO for radium removal. During the conversion the supply was switched over to deep well water from shallow wells. Plant No. 1 is currently supplied by three (3) deep wells and capable of treating approximately five (5) million gallons per day of water.

Water from the deep wells is treated with HMO (hydrous manganese oxide) in the filter detention tanks. The radium in the water is attracted to the HMO solution and the two compounds bond together. The HMO (with radium attached) is then filtered out of the water by a layer of sand.

The finished water leaving the filters is then chlorinated and blended in a 100,000-gallon mixing tank along with shallow water from Plant No. 2.

Plant No. 1 includes two (2) Tonka HMO removal filters, three (3) high service booster pumps and miscellaneous chemical feed equipment.



PLANT NO. 2

Plant No. 2 was constructed in 2005 as a shallow water iron removal facility to replace Plant No. 1 which was converted to the radium removal facility.

Plant No. 2 is a high rate iron removal plant. It is capable of processing water at a rate three (3) times greater than a conventional iron removal facility. Plant No. 2 can process up to five (5) million gallons per day of water.



The filtration method at Plant No. 2 utilizes chlorine, which oxidizes the iron allowing it to be filtered, and special sand that the iron bonds to as the water passes through the filter. The finished water from the filters is chlorinated, fluoridated and blended in the 100,000-gallon mixing tank with finished water from Plant No. 1.

Plant No. 2 includes forty (40) small high rate iron filters; three (3) high service booster pumps equipped

with variable frequency drive motors; chlorine generator system and other miscellaneous chemical treatment equipment.



Water Storage Tanks

The Water Treatment Facility has two (2) concrete ground storage water reservoirs. The large reservoir was constructed in 1992 and can hold 500,000 gallons of water. The smaller tank was built in 2005 and can hold 100,000 gallons of water.

Both tanks work together to provide finished water to the high service booster pumps. These pumps send the water back through the water mains to the water towers and to our customer's homes and businesses.



Backwash Lagoons

Both Plants No. 1 and No. 2 have filtration systems that must be periodically cleaned, or backwashed, to eliminate iron and radium. Without being properly cleaned the filters eventually would plug up.

Backwash water from Plant No. 1 contains some radium residuals. The water used after backwashing these filters is stored in a lined pond before the water is released for treatment at the City's wastewater treatment plant.

Backwash water from Plant No. 2 is loaded with Iron and is released into a surface water holding lagoon. The iron settles to the bottom of the lagoon after a few minutes. Periodically, the City will need to haul away the iron residual.

Booster Pumps

Water Plants Nos. 1 & 2 are each equipped with high pressure "Booster Pumps" that pump water from the treatment plant back to the City. These pumps are equipped to pump more water as the demand for water increases. This is especially important during fires or during the summer when many homes and businesses are lawn sprinkling during the same hours. The pumps are specially designed to increase the water pressure so the water can reach a height to fill the water towers located throughout our community.



Chlorine

Chlorine is used as a preventative disinfectant to the water supply. The Illinois EPA regulates the use of chlorine. There are several forms of chlorine including strong and weak liquid solutions, powders and gas.

As part of the City's treatment plant improvements, a sodium hypochlorite chlorine generator was purchased and installed.

The chlorine generator uses water, salt (sodium chloride) and electricity to generate a very weak (.8 %) liquid sodium hypochlorite solution. It is similar to household bleach, but not as strong.

This type of disinfectant is much safer to use than other forms of chlorine, especially gas chlorine which is a toxic substance. Safety of the City's Water Operators and safety of the surrounding community are of the highest importance to the City's water operation.



ON BEHALF OF THE CITY OF BATAVIA'S MAYOR
JEFF SCHIELKE, ELECTED OFFICIALS AND MEMBERS OF THE
WATER DEPARTMENT INCLUDING THE CITY'S DEDICATED
WATER OPERATORS, ADMINISTRATIVE ASSISTANTS AND
SUPERVISORS....

THANK-YOU TO THE CUSTOMERS OF THE BATAVIA WATER
DEPARTMENT FOR YOUR CONTINUED SUPPORT OF THE
CITY'S WATER SUPPLY.