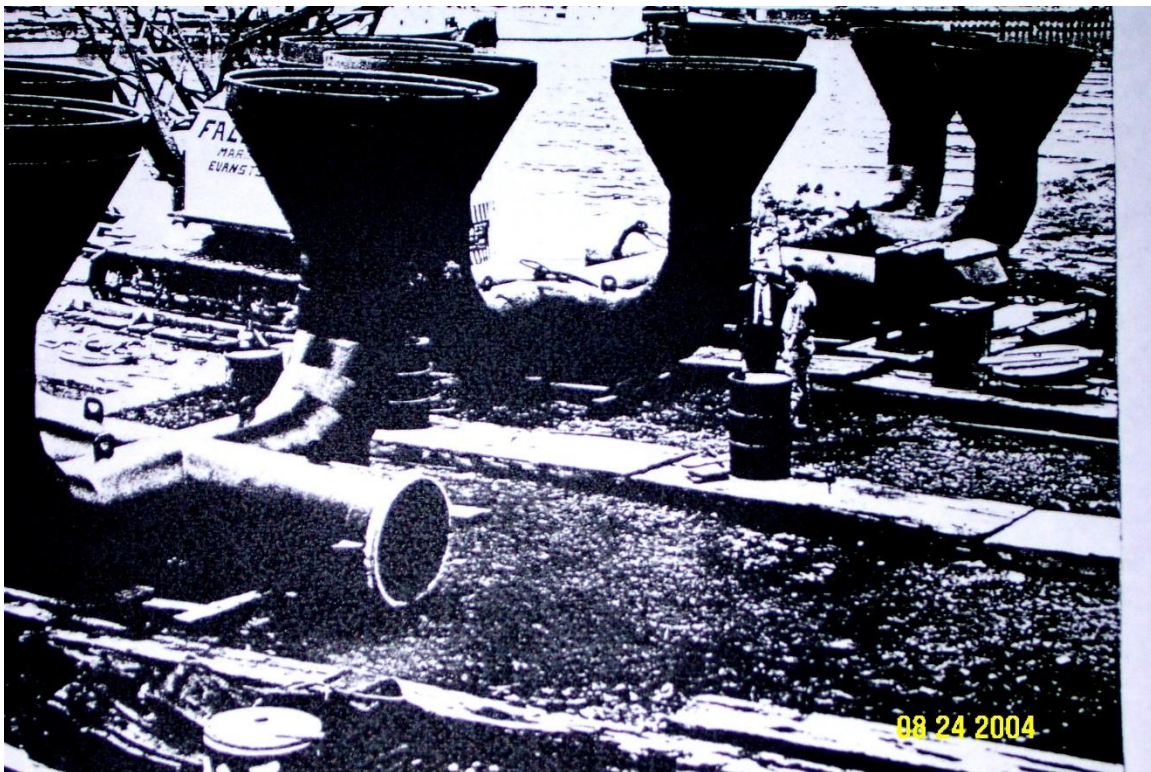


Sheboygan's Intake/Raw Water Improvement Project

Joe Trueblood, Water Utility Superintendent

On June 30, 1887 Flora and J.B. Corson recorded a property transaction to the City Water Company of about 2.5 acres for the consideration of \$1,200. From thence onward, water for the community has come from the same location nestled on Lake Michigan near Vollrath Park.

A key piece of infrastructure for any Lake Michigan water treatment plant is its intake pipelines, which deliver untreated water to a shoreline well. From the well, water is pumped through the treatment process until clarified, disinfected, and ready to send to the community.



(Superintendent Zufelt and Jerry Lapish inspecting the 1959 intake cones on shore.)

Sheboygan's shoreline well was dug to bedrock sometime between 1887 and 1900. It is 33 feet deep. Two current intake pipelines deliver water to the well. One is a 30" pipe constructed in 1909 at a length of 5,000 feet into the Lake. The other is a 36" pipe constructed in 1959 at a length of 2,500 feet into the Lake. Both of these pipelines are trenched into the Lake bed and emerge at their endpoints to allow the entry of water.

The flow capacity of these pipelines is restricted due to their size and length. The 30" has a capacity of 10 million gallons of water per day. The 36" has a capacity of 19 million

gallons of water per day. The average water usage in Sheboygan is about 12 million gallons per day but can range upward to 18 million gallons or more.

If the 36" intake pipeline went out of service, the remaining 30" intake could not deliver enough water to meet average demands. In addition, the typical working lifetime of an intake pipeline is about 100 years. Due to both of those factors, the Water Utility has been planning for an intake upgrade.

Water treatment plants aren't easy to modify. For example, the shoreline well can't be removed from service for weeks in order to connect a new intake pipeline. Water must always flow to the community. And space along the shore is tight.

After an engineering review of many options, the Utility determined the most feasible and economical solution is to replace the old shoreline well, the older intake pipeline, and the low lift pump station, which draws water out of the shoreline well. The existing infrastructure could be left in place and operational while construction takes place on the replacements.

The new intake pipeline is anticipated to be 54 inch diameter at a length of 5,000 feet. It should supply 34 million gallons of water per day, which is the treatment plant's rated capacity. The new shoreline well would be constructed north of the water treatment plant. It would be a modern concrete structure designed to accommodate vertical turbine pumps. These pumps push water out from the well rather than drawing it up out of the well. This eliminates a process known as pump-priming, which can be problematic.

Unfortunately, any type of construction in the Lake is very expensive. Although the project is preliminary, initial cost estimates are at \$28.5M for the new intake pipeline, shoreline well, low lift pump station, including engineering and contingencies. Despite the cost, this infrastructure is critical to ensure a safe, reliable supply of water for the community into the future.

With any major investment at the Water Utility, a primary consideration is the effect on water rates. The community expects low water rates, and the Board of Water Commissioners is dedicated to responsible management to ensure reasonable rates. Replacement of critical infrastructure comes at a price, and the intake/raw water project will certainly result in ongoing rate increases to offset new debt service costs.

After more than 100 years of service, it's fair to say the 30" intake pipeline and the old shoreline well have earned their retirement. And Flora and J.B. Corson would be proud to know that public water still flows from their old property.