Winter solutions

Avon Lake water plant works to solve ice woes

Officials learned from last year's crisis

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AVON LAKE — The Avon Lake Regional Water plant is looking to the future, one in which water will flow freely and ice buildups are a thing of the past.

Last weekend, an ice buildup on the intake valves slowed down the amount of water coming into the plant.

A more severe buildup problem, a crisis even, occurred around the same time last year, shutting off water to thousands.

Plant officials want a permanent fix, so they are:

- Designing giant, aboveground storage tanks to hold water that would supply the needs of customers in the event of another freeze. The new tanks will cost about $20 million and will take two or three years to complete.
- Looking at strengthening relationships with area water treatment plants, including Elyria, to more easily share water during this kind of emergency. The plans would make it easy to share water being pulled from the lake.
- Investigating several methods for keeping ice from building up on the intake screens, methods that take time and will be tested throughout the year. One involves attaching hard, plastic tubes in the pipes that will move with the flowing water and knock ice loose or keep it from forming.

Todd Danielson, chief utilities executive of the plant, said those plans and other methods used, despite icing problems last weekend, will help keep the water flowing in the future.

Plant officials used short-term solutions recently while implementing long-term solutions to prevent a repeat of what happened last year on Jan. 8, when the pipes were jammed with frazil ice — tiny crystals that merged and blocked water from getting through. That caused a severe water shortage that took several days to correct.

This week, the plant is returning to normal, supplying water to more than 206,000 residential and commercial customers in Northeast Ohio after some icing issues over the weekend that were solved using techniques learned the hard way last year.

Last weekend's problem was not caused by frazil ice, but by slushy ice built up inside the pipes and on the screens that keep unwanted objects from entering the pipelines.

These kinds of problems are common for water treatment plants along Lake Erie.

Plant officials on Sunday morning asked for voluntary water conservation, and by Monday afternoon the advisory had been canceled.

Danielson said this year's problem started much earlier than the public was made aware.

"We started having problems with ice on Thursday night," he said. "We were dealing with intermittent icing conditions on our two intake lines. Thanks to what we learned last year, we were ready. We called our contacts and had the emergency pumps and lines brought in so we could keep the water flowing while we worked on the problem."

Danielson said it was "business as usual" all weekend until Sunday morning. There were still problems with eliminating ice buildup from the intake lines. The water conservation advisory was issued as a precautionary measure.

Calls were immediately made for backup pumps and pipes, which were installed to keep water coming into the plant while problems were being worked out.

Plant workers employed several methods to break up the ice that had built up on the giant "screens" of the intake pipes.

First, they turned off the pumps to see if the ice will float off when it is not being sucked into the system by the pumps. When that failed, they blew air through the pipes to dislodge the buildup of slushy ice in the pipes and blow it out into the lake. Then workers "cranked up the system" to take water into the pipeline faster to clear the pipes.

Danielson said through the combination of methods, they were able to get the smaller of the two pipes free. The larger pipe was still clogged. Workers bypassed the intake screen to get the intake pipe working as well.

The emergency piping system was kept on hand until the situation is completely resolved. By Monday afternoon, the utility lifted the conservation measures for all customers, even though work is still being done on the larger intake pipes.

"We have divers out there working on the larger pipe to bring it up to speed," Danielson said.

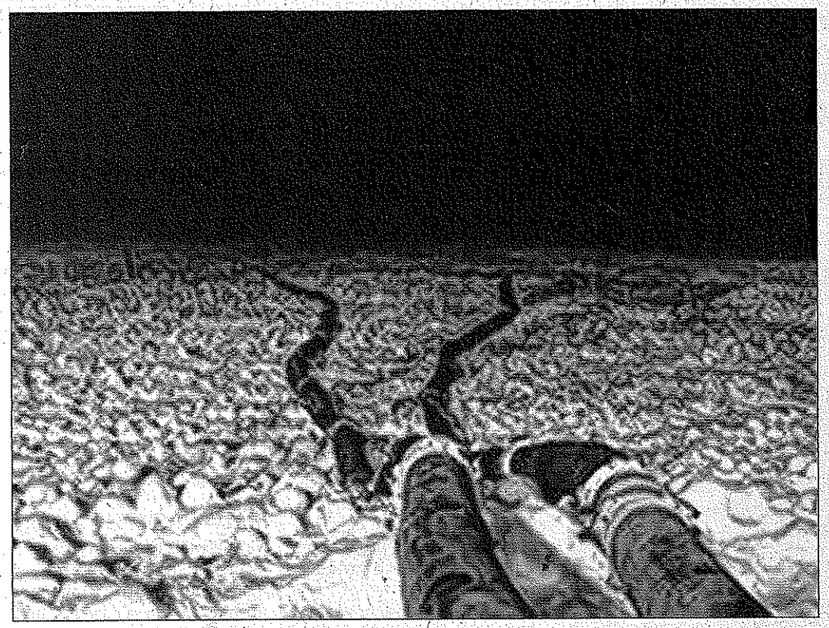
The description of the intake pipes as "screened" is inadequate.

Danielson said the two concrete pipes extend underground from the plant beneath the bottom of the lake. The first measures 36 inches in diameter and extends 1,800 feet out into the lake. The second measures 54 inches in diameter and extends 2,200 feet into Lake Erie.

The pipes then turn upward by a huge, elbow-shaped joint and emerge from the lake floor. They are capped off by a 14-by-14-foot funnel.

At the top of the funnel is a "screen," which is a series of square oak timbers that form a grid with about three inches between each timber. The larger pipe has two funnels feeding into it. The screens are said to allow water through but keep out things we don't want in the pipeline like logs, rocks, debris and fish.

"We learned a lot last year and it helped us out this time," said Danielson. "Last year we went from asking for conservation in 12 hours to declaring a state of emergency in 24 hours. This year we were able to keep things under control."



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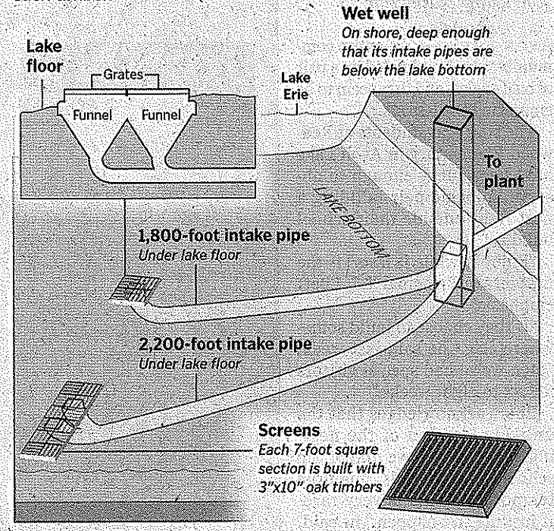
These emergency pipelines kept water flowing in 2014 for customers of the Avon Lake Regional Water plant after slushy ice slowed down the intake of water from Lake Erie.

How Avon Lake gets its water

The Avon Lake Regional Water plant gets its water from Lake Erie by extending two concrete pipes — one 36 inches in diameter and the other 54 inches — underground from the plant beneath the bottom of the lake. The pipes are capped on the lake bottom by funnels topped with a "screen," which is a series of oak timbers that form a grid with about three inches between each timber.



SOURCE: Avon Lake Regional Water

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