

ALL MIXED UP

Mixer technology unclogs lift station wet well pumps

By Kris Drewry

The Moon Township Municipal Water Pollution Control Plant in Pennsylvania faced a problem with its lift station wet well: Grease, rags, rubber material and almost anything else that could enter the system were clogging pumps and creating maintenance issues on a regular basis. Water Pollution Control Supervisor Ray Moorhead had to vacuum the wet well and send personnel into an environment that would make even the “Dirty Jobs” host cringe.

“I needed a solution that I could apply on the fly, without taking the well out of service,” Moorhead said. “The well is 65 ft by 65 ft by 30 ft deep and accumulated everything and anything that could mat together.”

Moorhead found the answer through a flier about Pulsed Hydraulics Inc. (PHI) and its low-tech approach to clogging problems. PHI representative George Pitcaim contacted Moorhead and explained that Moon Township could

resolve its predicament by tapping into one of its existing compressors and adding a control box, valve and the piping necessary to deliver an air burst.

“The PHI-300 will introduce a burst of compressed air at the base of the well, in a dead spot, and let simple physics break up the cap,” Pitcaim said. “By repeating the burst at controlled intervals, it will keep the cap from reforming.”

Moorhead was looking for a simple solution and considered this approach promising. The investment was minimal, and the installation could be conducted quickly. The results have been better than expected.

“The initial application broke up the grease cap so fast that the pumps clogged again as they tried to digest the chunks of matter that had broken free. I would suggest that the well be cleaned before installation of the PHI-300,” Moorhead said. “But, since the installation, the well is no longer an issue. The compressor is activated by a float, and



The plant's new mixing technology works by allowing a burst of compressed air at the base of the well to break up the cap.

we haven't seen any measurable increase in energy costs."

Stagnant Water Application

Moorhead was pleased with the results and conveyed his enthusiasm to Bert Rateau, superintendent of the Moon Township Water Authority. Rateau was faced with stratification in water storage tanks, which was creating all of the problems associated with stagnant water.

"We looked at numerous solutions and their costs," Rateau said. "Pittsburgh doesn't have an abundance of sunshine in the winter months, so a solar system didn't seem practical. Other applications required extensive installation efforts, and cost was always a factor."

In June 2010, Rateau installed a PHI-300 in a 1-million-gal vertical water storage tank, and the results were everything he wanted. First, Rateau learned from the Pennsylvania Department of Environmental Protection that construction permits were not required, so his staff installed the equipment without contractor assistance. The water authority, therefore, realized substantial savings from the beginning.

"We tapped into an onsite compressor, connected the valve and control box, then we ran flex pipe to the top of the tank," Rateau said. "We next connected a stainless pipe that joined to a 'T' at the bottom of the vessel. The forming plates were then anchored and the installation was complete."

Temperature sensors indicate that the tank is mixing consistently while the compressor is operating 30 minutes on and 360 minutes off. The energy cost is estimated at about 50 cents per day.

"Moon Township has three more tanks that will get their PHI installation soon," Rateau said. "We will have divers clean the tanks and inspect the interior. Once that is complete, the PHI-300 solution will service those tanks as well." **PS**

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The wet well at Moon Township frequently faced maintenance problems prior to implementation of mixing technology.

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