

Pump Station Retrofit Ends Stormwater Woes

A Bergen County, New Jersey, riverside town receives relief from torturous flooding after its stormwater pumping station is dramatically improved by the installation of new Flygt pumps.

For many years, residents of Lyndhurst, New Jersey, have been tormented by different types of flooding in several parts of town. Residents were increasingly becoming concerned about their personal safety as well as property values.

Scope

Failing, old, long shaft pumps at the Lyndhurst Sewer Department's stormwater station were out on maintenance issues more than in operation. Existing pumping equipment was noisy, prone to blockage by debris, and suffered from lube system problems. Removing the equipment for service was not only a challenge, it was also expensive.

Key elements of the improvement to the township's stormwater pumping station design began with improving hydraulic inlet conditions in the clear well. Lyndhurst was also determined to procure robust replacement pumps that were both compact and able to handle fibrous debris from a floating river. Finally, the town required a remote monitoring and control system when the pumping station was inaccessible due to flooding.

Solutions

Pump replacement included a strong preference for a submersible-pump solution by Lyndhurst officials. Lyndhurst DPW was already very familiar with Flygt's reliability and the services provided by Pumping Services, Inc., the pump manufacturer's local representative. After careful review of the pump's axial flow design, it was decided to go with mixed flow units. The mixed flow pump units offer a compact footprint that could be efficiently incorporated into the existing station clear well. In addition, the axial flow pump can operate in a less than ideal wet well layout and are able to handle difficult flood water debris, such as branches, leaves, weeds, trash, and sediments like sand, silt, mud, and soil.

Previous pumps were replaced with two 135-horsepower Flygt Model LL3602 Submersible Stormwater Pumps. The stormwater station now has a reliable capacity of 36,000 gpm.



Flygt LL3602 pumps on the way to save Lyndhurst from flooding



Flygt and Pumping Services provide turn-key solution

Customer: Lyndhurst, NJ

Challenge: Failing pumps from flooding and clogging

Products: Flygt LL3602 Submersible Stormwater Pumps
SCADA Monitoring and Control System

“The new submersible mixed flow pumps have the same 135-HP motor rating as the old pumps, but these pumps indeed are working,” said Patrick Carberry, P.E., the project manager from the consultant on the project, Neglia Engineering. “Even when the pump capacity rating [on paper] remains unchanged, the difference is visible. With the new pumps, area ponding is rapidly removed after heavy rain events.”

The new submersible pumps do not require a separate lubrication or cooling system and operate with a low operating sound level, minimal station superstructure, and simple pipe work.

In the past, the stormwater pumping station could only be controlled at the pumping station. During major flooding events, access to the pumping station is not possible. The retrofitted pumping station design now includes software that enables remote monitoring and control of essential equipment such as the pumps and generator. Monitoring and control is available at off-site locations, including the Lyndhurst Department of Public Works headquarters, through a web based SCADA system. Furthermore, the SCADA system allows monitoring of pump and generator operations, fuel levels, and even the water level of the Passaic River at the pumping station.

Results

The new stormwater pumps saved the day. Flood ponding has been rapidly removed. Since the new pumps were installed in 2014, residents have been able to rely on a stormwater pumping system that finally works.

The Township of Lyndhurst Engineer, Michael J. Neglia, P.E. said: “At the end of the day, the Lyndhurst residents secured relief from chronic troublesome flooding. Lyndhurst gained a reliable, state-of-the-art stormwater pumping station, featuring enhanced hydraulic performance—with new pumps, controllers, standby power system, SCADA, and communications systems. At the same time, Lyndhurst has reduced the operation and maintenance expenses of the stormwater pumping station.”



Patrick Carberry, PE to supervise the pump installation

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