

Saved From Rainy Days



By Steve London

State of emergency leads to critical lift station upgrade

The town of Swan River, located in Manitoba, Canada, knew that the two pumps at one of its lift stations were nearing the end of their service lives. In fact, the town had already begun preparing for the inevitable, when the situation changed rapidly and required the aged equipment to be replaced in a very short period of time.

Original construction on the Ross Street lift station—Swan River's main lift station—started in 1975 and finished in 1979. By 2012, the station's pumps were so old that parts for them no longer could easily and readily be obtained—components that failed had to be manufactured, which was costly and made for long lead times. After speaking with its consulting engineer, Associated Eng., and Xylem, the town already had begun working on securing funding and writing new specifications to upgrade the station when disaster suddenly struck.

Disaster Strikes

During the 2012 Manitoba Summer Games, a national multi-sport and cultural event, on

July 11 and 12, the area received a massive rain-storm that dumped more than 76 mm of water on the area. Already under flood watch, the Swan River was expected to peak at levels similar to what was experienced during devastating flooding in 2006.

The town quickly received a high water level alarm from the Ross Street station. Upon inspection of the station, it was discovered that one of the pumps had died and no longer was functioning. The immediate suspect was transformer failure, but upon further testing, it was found that a motor in the dry side of the lift station had shorted out due to excessive moisture.

The town of Swan River immediately called a state of emergency and began discharging wastewater directly to the river to prevent sewage backup into area homes. With the quick response of the town's public utilities, the town was able to get the issue under control and start working on the solving the electrical issues in the dry pit.

The town selected three Xylem Flygt Model NZ-3171 submersible pumps to replace the old equipment. These three 600-V, 30-hp no-clog pumps offered a 25% boost in efficiency over their venerable predecessors. Other benefits of the pumps included:

- The adaptive self-cleaning N-impellers move axially to enable easy passage of large solids through the pump.
- A wide range of spare parts now is kept on site for speedy replacement if necessary. In addition, other spares can quickly be ordered from Flygt's North America central distribution center.
- The old pumps created a space issue because they were much larger than the NZ-3171s, making service in tight quarters a dangerous situation. This no longer is the case with the smaller and sleeker pumps, which can now be easily and safely maintained.
- Original voltage to the pump station was 600 V. However, because the older pumps had 230-V, three-phase motors, a transformer was required to set the voltage down. Replacement with the NZ-3171s enabled the town to eliminate the transformer, which was removed and not replaced.

During installation of new piping and pumps at the Ross Street station, a bypass system using an external engine-driven pump moved wastewater from the approach manhole to the force main. The bypass system now allows the station to be shut down without putting the town at risk of wastewater backup. In addition, in the future, the station can be bypassed during maintenance, ensuring worker safety.

New Features & Increased Capacity

To conserve space, an electrical room was created within the existing lift station's footprint. This room is an unclassified area, which allows the use of standard electrical equipment, generating cost savings. As a result, new electrical equipment was installed in the room without having to shut down the lift station for an extended period of time.

The newly upgraded station was designed to be easily powered with a Flygt diesel backup system to ensure the town now has 100% redundancy. The lift station also features separate hatch access to both the dry pit and wet well.

Now with completely upgraded mechanical and electrical systems, along with the new pumps, capacity of the Ross Street lift station is 85 liters per second running a single pump, 106 liters per second running two pumps in parallel and 113 liters per second with three pumps running. **w&wd**

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