

City of Ashland pigs sanitary force main

Ashland, Kan., located about 45 miles southeast of Dodge City, was having problems with the primary wastewater system lift station. Initially it was considered to be a pump problem, perhaps being plugged with debris or worn impellers due to excessive run times. The city also experienced some bypassing at the lift station, which was contained in the area of the old treatment plant. A bypass should always be reported to the Kansas Department of Health and Environment (KDHE) even if it is contained.

Where's the problem?

The pumps are usually the first component that is suspect with failure of a lift station. However, in this case the pumps did not cause the problem. Instead the Ashland crew determined the problem had been associated with a force main. The main is a 4-inch diameter PVC, 2,000 feet in length. The pipeline crosses a low area and has a creek crossing where heavy solids might settle. Problems with force sanitary sewer mains can be either a partial or complete blockage. Sometimes the problem can be caused by a broken line.

Ashland City Superintendent Doug Graff contacted Todd Mayer of Mayer Specialties for assistance. The decision was made to pig the sanitary force main. Mayer Specialties also has the contract for

routine maintenance of the collection system for Ashland.

After attending a KRWA training session in Dodge City on collection systems, I headed to Ashland to watch and assist with the pigging project on April 16, 2008. I had not

Establishing a benchmark

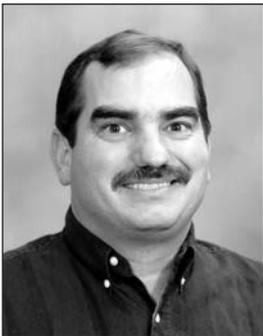
The pumping rate was determined in order to establish a comparison of a "before and after" pigging project. During the pigging, the pressure was started at idle with no pigs at 40 psi and

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witnessed pigging of a sanitary sewer force main before.

A pit was dug around the force main earlier in the week. The pig launcher and valve supplied by

adjusted to half throttle to 75 psi as the pump continued to run at half throttle. A lot of soft solids and other debris were cleaned from the pipe. As the debris was



Charlie Schwindamann
Wastewater Tech



The Ashland city maintenance crew checks necessary equipment such as the pig launcher and pump as Todd Mayer, owner of Mayer Specialties of Goddard, Kan., prepares other equipment and materials for the project.

Mayer was installed the day of the project. This pig launcher and valve would be left in place so that pigging could be conducted annually. A pit would be placed over the launcher and valve for better accessibility and to save time in future pigging.

pushed from the line, the pressure slowly started dropping, indicating a line with fewer obstacles. The pressure dropped to a steady 50 psi. The first phase of the actual cleaning was complete.

The lift station was operated after each cleaning phase to determine the increase of



Doug Graff (kneeling) and Richard Foster prepare the launcher and valve to be installed in the force main.



The pig launcher is installed with a valve to allow inserting the pig into the main without having backsiphonage of wastewater into the pit each time a pig is needed.



Ashland crew member and volunteer fire fighter Dan Pearce operates the fire truck used to supply the water needed for the pump to force the pigs through the force main.

discharge. A 4-inch 5B swab was then placed in the launcher with the pump increasing pressure to 25, then 65 psi, as the pig moved through the line. Later as debris was removed from the line, the pressure dropped to 45 psi.

The next pig to be used was a 5-inch 5B grey polyester swab. Yes, a 5-inch swab can be put through a 4-inch line! We ran out of water during this run and turned

on the lift station to force the pig through the line. The pressure was only 15 psi; it did a fine job.

On the next two runs, a 4-inch 5A squeegee was used; at half throttle the pressure was 35 psi. Recall that the first run with no pigs was 75 psi at half throttle. After the pig exited, the throttle was fully opened. The pressure only increased to 50 psi, indicating a clean line.

Superintendent Doug Graff provided records of the past electrical usage of the lift station. In March, for example, the electrical use was 1,570 kWh. In May the use was 1,150 kWh. There may be some variable due to rain events but those are not considered here. The difference is 420 kWh. At \$0.12 per kWh, the electrical savings is just over \$50 per month or \$600 annually.

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Preston Trotter of Mayer Specialties checks the pressure gauge used in determining if the line has been cleaned.



Above: Ashland crew member Dan Pearce adjusts the pressure on the pump as needed.



Above right: Todd Mayer, Mayer Specialties, LLC, explains the different type of pigs used.

While this may seem insignificant, to a small system it represents a meaningful cost reduction. Systems with multiple lift stations might save thousands of dollars because of reduced electrical use.

The time required to conduct the pigging was relatively short. The installation of the launcher started at about 8:30 a.m. and the final pig exited the force main at about 1 p.m.

Right: Todd Mayer uses fish net to retrieve the pigs from the influent structure. No one wants pigs in sewer ponds.

I would like to thank Ashland Superintendent Doug Graff and Todd Mayer of Mayer Specialties, LLC for providing details to make this a more understandable and approachable topic. Other wastewater systems with force mains may be candidates for similar pigging projects.




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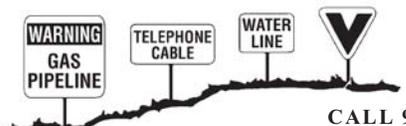
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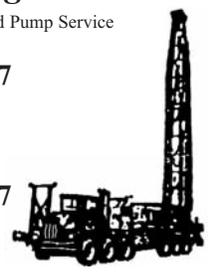
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