



Minnesota is a land of lakes, and Minnesotans try to be proactive when it comes to protecting lake environments.

In many smaller, rural communities, aging and deteriorating septic systems are a continuing problem. Without access to a municipal sanitary sewer system and with too few residents to justify construction of a conventional system, there are not many options available.

Residents of Rockville and the Grand Lake and Pleasant Lake areas, just west of St. Cloud, recognized something had to be done when elevated nitrate levels in lake water confirmed their lakes were being threatened.

After investigating available options, Rockville planners determined the most practical course of action was to construct two grinder pressure sewer systems – one for each of the lake areas – and a collection and conveyance system, including lift stations, to pump wastewater to a treatment plant in Cold Spring.

To complete the three projects, nearly 27 miles of HDPE force mains and laterals were installed at a cost of \$9.2 million.

Grinder pump pressure systems are becoming a practical solution for many smaller communities, especially those in waterfront, hilly, remote or otherwise challenging locations. Individual grinders process residential sewage which is transmitted under pressure to a private or commercial treatment plant.

“This was really the only feasible choice for us,” said Greg Stang, public works supervisor for the city of Rockville. “There were a lot of failing septic tank systems. And the new sewer system has turned a lot of unbuildable land into useable lots because before there was not sufficient space to install septic systems.”

Change of plans

Stang said originally the two pump grinder systems and the conveyance system were bid as a single project.

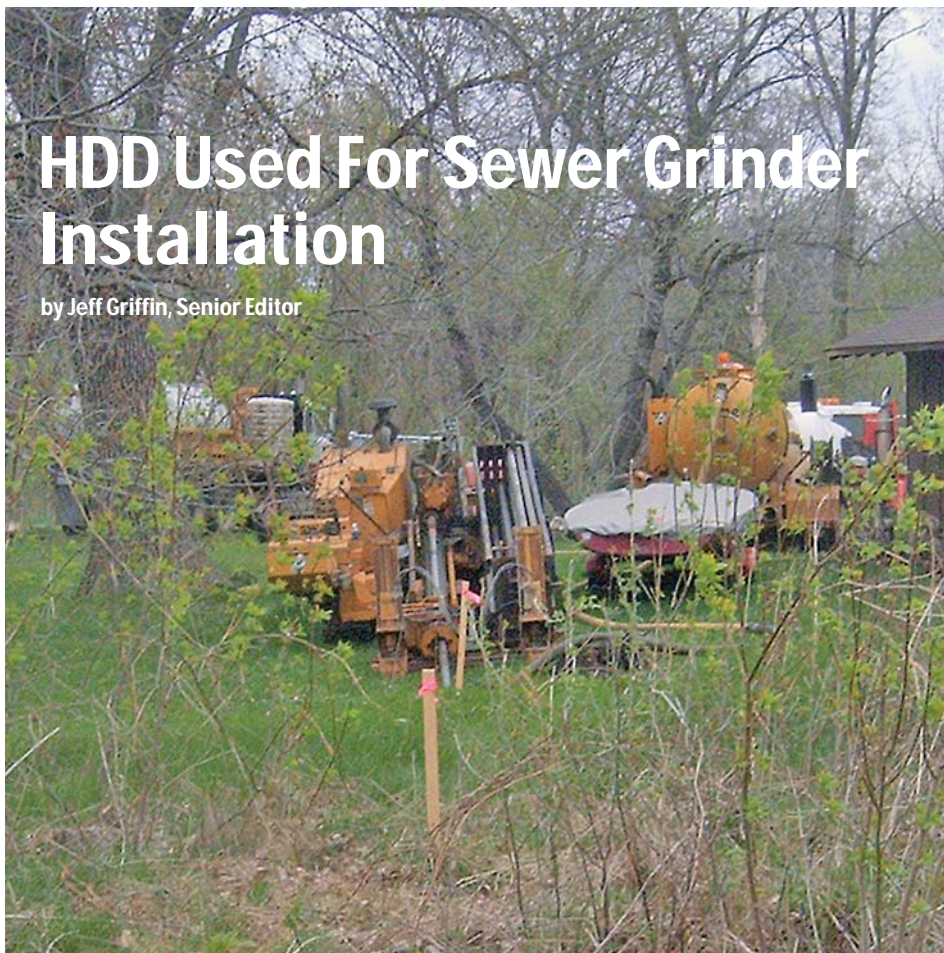
“The cost of the combined projects was too high,” Stang said. “We found that by splitting them into three separate projects, we could attract small contractors as bidders, and that resulted in significantly lowering the overall cost.”

The two lake grinder system projects were similar in size and scope. Most of the pipe installed in both was completed by horizontal directional drilling.

The Pleasant Lake project serves 177 homes and required the installation of 41,000 feet of pipe for force mains and laterals. Pipe sizes ranged in diameter from 1 1/4 to 6 inches, and 177 grinders. Contractor was GM Contracting, Lake Crystal, MN.

HDD Used For Sewer Grinder Installation

by Jeff Griffin, Senior Editor



The Grand Lake system is comprised of 40,937 feet of HDPE force mains and laterals in sizes from 1 1/4 to 4 inches in diameter, and 183 grinders.

Hydro Logical Systems Inc., Waite Park, MN, was the contractor. Company Vice President Rick Johnson said the project illustrates the benefits of trenchless construction.

"Ninety-five percent of the pipe was installed by horizontal directional drilling," said Johnson. "High water tables, limited access to work areas and the ability to install pipe with minimal surface disturbance and inconvenience to residents made directional drilling the best method of construction."

Approximately 400 small dewatering sets were necessary to install the grinders and connect laterals to mains.

Johnson said throughout construction regular meetings were held with the city, engineers and contractors to deal with any changes or project updates, and to keep the homeowners informed of progress.

"Special care was given to maintaining homeowners property so as not to cause any unnecessary disruption to the homeowner," Johnson added. "Clean up, black dirt and seed used for restoration, and erosion control were given high priority to return the property to pre-construction condition."

Conditions, equipment

Johnson said drilling conditions ranged from peat to water-filled sand and cobble.

Drilling equipment used on the project were two 24,000-pound pullback Vermeer D24x40A HDD rigs and one Vermeer D80x100 unit with 80,000 pounds of pullback.

Other equipment included mini excavators equipped with auxiliary hydraulics, skid-steer loaders, a versahandler, four dewatering systems and various trucks, trailers, and support equipment.

"We are pleased that the project, including the pipe system and placement of grinders for each home provides an environmentally-friendly, leach-free sewer system to replace the failing septic systems," concluded Johnson.

Construction of the trunk conveyance system required 45,000 feet of 14-inch force main and 8,000 feet of 8-inch force main pipe. Much of the pipe also was installed by HDD. The contractor was Barbarossa Inc., Osseo, MN.

Barnes grinders were supplied by Quality Flow Systems, New Prague, MN.

The engineering firm for the three projects was Bonestroo, Williamson, Kotsmith of St. Cloud, MN.

Stang said all pipe is in the ground and the last hook ups were completed in July. The system is owned and operated by the city of Rockville and serves 360 homes. Property owners will pay costs of the system over a period of 20 years. Rockville, Rockville township and Pleasant Lake were incorporated into the city of Rockville in 2002.

FOR MORE INFORMATION

HDD contractor:

Hydro Logical Systems, (320) 249-0585

HDD equipment:

Vermeer, (888) 837-6337, www.vermeer.com