




Pressure Sewer Systems are a Practical, Economical Choice for Lakeside Communities

 When it comes to wastewater systems, lakeside communities may find they have plenty of reasons to apply pressure—pressure sewer systems, that is. As compared to traditional gravity systems, pressure sewers offer an economical and environmentally sensible alternative.

In an effort to protect water quality, lake associations are replacing outdated, often failing, septic systems with community waste systems. Features of lake area topography—high ground waters, rolling hills, or rocky terrain, for example—often make the installation of a conventional gravity system very costly. A pressure sewer system can be installed for 30-50% less than a conventional gravity system in these areas.

The Environmental Edge

In addition to the economic advantage they offer, pressure sewer systems are attractive because installation has a less dramatic impact on the surrounding environment and architecture than do traditional systems. Because they do not rely on gravity, system piping can be laid to follow the contour of the land.

The pipes used in pressure systems have diameters of 2 to 4 inches, as

compared to 8-24 inch pipes used in gravity systems. The smaller diameter pipe allows for less intrusive installation because trenches are unnecessary. Instead, directional drilling, a technique traditionally used in the oil industry, is used to bore horizontal holes into which the piping is laid. This method means less surface intrusion on the homeowner's property.

Operational Considerations

Due to the number of pumps used in pressure systems, they tend to require more maintenance than gravity systems. (This is why large cities are more likely to choose a conventional gravity system.) However, each pump is installed with an alarm system to warn homeowners if the water level in the pump station is too high, indicating a maintenance problem. If this occurs, it is relatively easy for an operator to open the pump station and investigate the problem because the unit is installed with access at ground elevation.

If federal or state funds are used to construct the system, maintenance cannot be left to individual homeowners. Instead the community must establish a sewer association to manage maintenance.

Case in Point: The Cedar Lake Project

In July 1997, the community of Cedar Lake in Scott County, Minnesota asked Bolton & Menk to evaluate sewer alternatives, then recommend a system that would offer permanent service and preserve the water quality of the lake. At the time, many of the homeowners on Cedar Lake had private septic tanks that were outdated and did not meet state or county codes. In an effort to limit the pollutant load to the lake through failed septic tank systems, local residents were avoiding laundry and using sink disposals.

The community chose a pressure sewer system tied to a regional treatment plant to replace the septic systems for several reasons. One, with a pressure system the lakefront community would be able to avoid deep trenches that occur with gravity systems in lakefront areas. Also, the economic savings for Cedar Lake were substantial. The estimated cost of a pressure system was 3.3 million dollars, and for a gravity system, 4.5 million. This included the construction of a forcemain to the regional treatment plant.

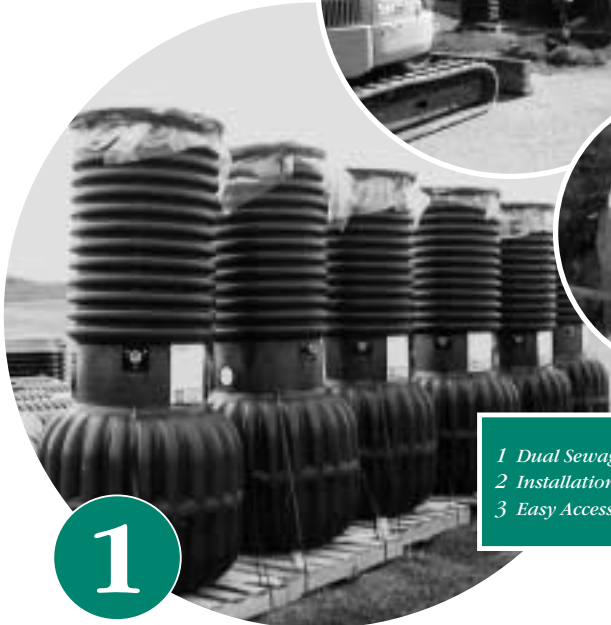
2



3



1



- 1 Dual Sewage Pump Stations
- 2 Installation of Pump
- 3 Easy Access Pump Cover



Douglass Named Senior Associate

William R. Douglass, of Mankato, has been promoted to a Senior Associate member of the firm. He is the leader of the Water Resources Group, which is located in Mankato. The Water Resources Group is responsible for meeting client needs in the areas of stormwater management, wetland delineation and mitigation, treatment of municipal and agricultural runoff, and stormwater pollution prevention plans. One of his key responsibilities will

be to provide municipal clients with assistance in achieving compliance with the Phase II NPDES Permits. Mr. Douglass joined the firm in 1983, serving in the Fairmont office until his move to Mankato in 1996. He is a registered professional engineer with a B.S. Degree in Civil Engineering from the University of Minnesota.

Manhart Receives 2002 Appreciation Award

Bolton & Menk's Stephen J. Manhart was recently awarded the 2002 Appreciation Award presented by ITS Minnesota, the Minnesota State Chapter of the Intelligent Transportation Society of America. ITS Minnesota is an organization of companies and agencies who share an interest and vested concern in utilizing technology and innovation for the improvement of transportation systems. The award was presented in appreciation of Manhart's leadership and determination in the effort to bring the PTOE (Professional Traffic Operations Engineer) Examination to Minnesota. His efforts provided the opportunity for transportation professionals throughout the state of Minnesota to enhance their qualifications within the discipline.



BY DESIGN

*Volume XII
Number 2*

*Editor: Nancy Thorkelson
Production: ENVISION: Design that Works, Inc.
Saint Peter, Minnesota*

Published Quarterly by Bolton and Menk, Inc.

*Offices:
1960 Premier Drive
Mankato, MN 56001-5900
Phone 507-625-4171
FAX 507-625-4177*

*219 North Main Street
Fairmont, MN 56031-1833
Phone 507-238-4738
FAX 507-238-4732*

*140 First Avenue North
P.O. Box 434
Sleepy Eye, MN 56085-0434
Phone 507-794-5541
FAX 507-794-5542*

*1515 East Highway 13
Burnsville, MN 55337-6857
Phone 952-890-0509
FAX 952-890-8065*

*316 Fourth Street Southwest
P.O. Box 895
Willmar, MN 56201-0895
Phone 320-231-3956
FAX 320-231-9710*

*MD-52 • 1107 Hazeltine Blvd.
Suite 480
Chaska, MN 55318-1009
Phone 952-448-8838
FAX 952-448-8805*

*2730 Ford Street, P.O. Box 668
Ames, IA 50010-0668
Phone 515-233-6100
FAX 515-233-4430*

*108 North Water Street
Liberty, MO 64068-1787
Phone 816-792-5100
FAX 816-792-2133*

bmi@bolton-menk.com

*Designing for a
Better Tomorrow*

*Bolton & Menk is an affirmative
action employer.*

Pressure Sewer Systems Offer Long-Term Value to Property Owners

Continued from page 1


In the Cedar Lake system, each home is equipped with a small grinder pump station buried in the yard. Wastewater from the property flows into the pump station where grinder blades shred the solids into a slurry. The system then collects the sewage in a "ring route" that circles the lake and leads to a larger pumping station at the southeast corner of the community. From there, the wastewater is pumped to the New Prague Wastewater Treatment Plant for treatment.

Construction of the sewer system began in 2001; the system is slated to be in full operation by July 2002.

Residents in the Cedar Lake Water & Sewer District are subject to regulations, connection fees, and treatment charges imposed by the City of New Prague. Each homeowner will have a charge which is estimated to be \$36 per month. This fee covers operation, maintenance and replacement costs, as well as monthly treatment fees paid to the City of New Prague.

Cedar Lake's pressure sewer system is expected to fill the rural community's sewer needs for the long term. According to Cedar Lake Area Water and Sanitary Sewer District Board member Bob Brautigam, selection and design of a new system, and the process of approval by state and county governments were major tasks accomplished with the help of Bolton & Menk. Residents are gratified to know construction will soon be complete, and they can begin enjoying the luxuries of sink disposals and washing machines in their homes once again. ■

Surveying Swan Lake

 When a group of hunting clubs and the Department of Natural Resources (DNR) worked together last year to establish an avoidance area at Swan Lake in Nicollet County, Minnesota, they turned to Pell Johnson of Bolton & Menk to coordinate the surveying and mapping of the area.

The project began as an effort to relieve increasing hunting pressures on the lake's migratory waterfowl population. Though a 600-acre refuge existed in the heart of the lake, a second protected area became necessary to encourage migrating water fowl to rest at Swan Lake for longer periods, for both preservation and hunting.

After several discussions, the involved groups, including the Minnesota Waterfowl Association, Nicollet Conservation Club, Swan Lake Area Wildlife Association and the DNR, elected to create a 200-acre avoidance area rather than a full-blown refuge.

Avoidance areas are a new concept that provide more management flexibility than a traditional refuge, which is governed and enforced by the DNR. An avoidance area gives hunters the burden of enforcement and allows both hunting groups and the

DNR to evaluate the effectiveness of the boundaries at the end of the season.

The groups decided together that Swan Lake's South Bay offered ideal conditions for an avoidance area. The 1400-acre open water area, with its waterfowl food sources of wild celery and sago, is an historical collection center for migrating diver ducks.

When selecting the avoidance area boundaries, the cooperative wanted to minimize the loss of duck blinds typically used by hunters. Because the locations of existing duck blinds were unknown, a survey was needed to help determine the official boundaries of the avoidance area. This is where Bolton & Menk entered the project, volunteering the services, time, equipment and manpower necessary to conduct the survey and prepare the maps.

In early September, a survey crew comprised of Johnson, Rory Jensen, and Peter Blethen established a base point on the land's edge for reference. Using the satellite technology of the Global Positioning System (GPS) and an antenna mounted on the front of a motor boat, the crew collected the positions of cattail blinds surrounding the proposed avoidance area. It was an unusual project for Bolton & Menk, as it

required surveying on water for the locations of hunters blinds.

Once the survey portion of the project was complete, the points were plotted and a map was created in Bolton & Menk's Mankato office. The boundary established avoided as many blinds as possible.

Shortly before the hunting season commenced, Travis Javens, Todd Javens, Jensen, and Johnson returned to Swan Lake with the coordinates of the boundary positions and placed temporary buoys at 300-foot intervals, clearly marking the restricted area. The Nicollet Conservation Club then completed the project by replacing the temporary buoys with permanent markers and printed signs.

Reports indicate that the area is a success so far, with an apparent increase of diver ducks in residence. The cooperative effort of wildlife associations and the DNR, combined with Bolton & Menk's versatile services and volunteer work, helped make this much-needed avoidance area a reality.

The project continues the spirit of volunteerism at Bolton & Menk. "It is especially rewarding when public service efforts, such as this survey, utilize our professional talents," said Blethen. ■



2002

LEAGUE OF MINNESOTA CITIES
Annual Conference

June 18-21, 2002
Rochester, Minnesota



Come see us in booths 33 & 34.



BY DESIGN

Attn. Circulation
1960 Premier Drive
Mankato, MN 56001-5900