



Volume XI
Number 3

BY DESIGN

Escaping to the Lake

As lakeshore populations increase, lake residents are being confronted with complex water quality and wastewater disposal decisions.



Cool water, pristine views, the promise of fun, and a hunger for solitude drive us to the water. We crave an escape. We find it at the lake.

Getting there is easier than it's ever been. Good roads and new communication tools "shorten the distance," making longer stays possible. Some of us extend the weekend stay, working part time away from the office. Others just stay. Period.

The decision to make lakeshore living permanent is a growing trend influenced in part by economics. Rising property values, the expense of maintaining two homes, and active lives that prevent short visits force choices. When an either/or choice is made, the lake option often wins out.

The result is a trend toward larger homes on lakeshore property. Year-round residents frequently choose to expand or enhance the cabin, or build a new,

larger home. Cabins that remain week-end get-always are frequently changing, too. Upgrades and the construction of additions reflect high standards of living and a trend toward the use of cabins year-round.

In this environment, traditional septic systems become ineffective for wastewater treatment. Jon Peterson, BMI engineer, explains,

"Environmentally, small cabins used on a seasonal basis have a minimal impact. With the construction of larger, year-round homes around the lakes, at nearly urban densities, there simply is not enough room for properly functioning drainfields."

To operate properly, a septic system with a mound type drainfield typically requires 3700 square feet of property for a 3-4 bedroom house. In addition, there must be three feet of separation between the drainfield and the ground water level. This level of separation allows the nat-

ural filtering process by the drainfield to take place before the treated wastewater meets the natural ground water. For this reason, limitations are placed on the amount of space a home can fill on a lot—whether in town or near a lake.

As development becomes more dense, new wastewater treatment options, including shared and community systems, must be explored to meet environmental and water quality needs. Each treatment option has advantages and disadvantages but all are complicated by the close proximity of most lakeshore residences to both the water table and water's edge as well as the sometimes varying interests of the home owners themselves.

Making the Change

The change from individual septic systems to a shared wastewater treatment

Lakeshore development

Continued on page 3



*Volume XI
Number 3*

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

Published Quarterly by Bolton and Menk, Inc.

BY DESIGN

Offices:

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

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

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

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

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

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

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

Designing for a Better Tomorrow

Bolton & Menk is an affirmative action employer.

bmi@bolton-menk.com

Lakeshore development

Continued from page 1

system requires good leadership, organization, cooperation, and the ability to stay with the project for a period of years. Because the population of each lakeshore community is unique, as are its geographical features, history and regional connections, each project requires unique organizational and design solutions.

Every project begins with an organizational and approval process. For some lakeshore associations this means cooperation with cities and/or counties in the region and eventual integration of systems. In others, where integration of systems is not the optimal choice, a treatment plant may be constructed to serve only the lakeshore association. Either solution begins with formation of a sanitary sewer district, approved either at the county level or through legislative action at the state level.

Unique Solutions

Three current Bolton & Menk projects illustrate the influence of regional differences on wastewater solutions for lakeshore communities. On each of these projects, the firm has had an active team role from the concept development phase through project design and construction.

In central Minnesota, a project in the **Green Lake** area provides a glimpse at a solution that involves a lake association, two municipalities, and county government. Nearing completion, this project began with formation of the Green Lake Sanitary Sewer and Water District in the 1970s. At that time the District, which includes the cities of New London and Spicer, Kandiyohi County, and the Green Lake Association, made plans for a wastewater treatment plant and central sewer collection system around Green Lake. A variety of events derailed the original centralized project concept, and in the 1980s, with some funding assistance, the District focused on upgraded on-site septic systems and irrigation treatment ponds for the cities.

By 1992 it was evident that the solution of the early '80s had failed. Residents of the area had two choices: to build a new system or place a moratorium on expansion and redevelopment activities.

Gary Danielson, Public Works Director, Kandiyohi County, describes the process,

"After a hearing in 1995 the two cities were ready to move ahead with a change from pond systems, but people who lived around the lake were skeptical. The project didn't seem necessary; they'd invested in upgraded septic systems just ten years earlier. We presented the realities of the situation and the options. We held the informational meetings on weekends in the summer, when

the majority of property owners were around. They did not want to repeat the mistakes of the 1980s and were afraid of potential costs."

Residents eventually became a driving force in the project, which grew at their encouragement to include water treatment and road improvements in addition to wastewater treatment. Bob Brown, BMI Vice President, says their efforts heavily influenced acceptance of the project,

"At one point, lake association leaders went door-to-door discussing the need for the project and the way costs would be handled. They were interested in protecting the lake, and when alternatives were discussed they chose a long-term solution."

Residents in the Green Lake Sanitary Sewer and Water District are satisfied with the results. Says Danielson, "They appreciate the drastic improvement in their drinking water, the new road, and improved fire protection. They're also able to develop their properties without wondering where the septic drain field is."

A current project at **Cedar Lake** took a different course. Lake association members there formed a sanitary sewer district through action by the state legislature, giving the District sole authority to assess residents for sanitary sewer improvements. Work at Cedar Lake has proceeded quickly. The number of homes and their proximity to the water made a pressure collection system a cost-effective option. The system, which is installed just below the frost line, uses directional boring, a process that minimally impacts the landscape.

Another variation is evolving in Le Sueur and Blue Earth Counties, where **Lake Washington** residents are working to establish a sanitary sewer district at the county level. The involvement of two counties makes the project more complicated, as indicated by Jon Peterson, project manager,

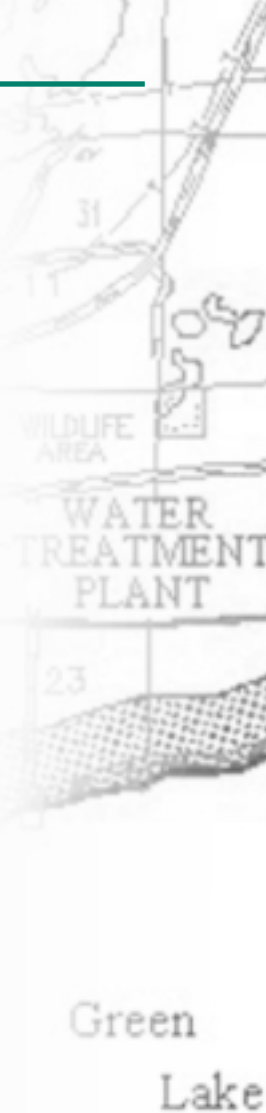
"Projects like this are not simple, and take time. Here, the lake association is heading up the change. Preliminary plans and preparations are underway. In this case, Lake Washington is close enough to regional wastewater treatment facilities to make a forcemain more cost-effective than a treatment plant."

All managers concur that to succeed with a project of this type collaboration, clear communication and a long-range plan are essential. Bob Brown, project manager, Green Lake, also emphasizes the importance of a regional outlook,

"Regionalization should be the first option considered for townships, lakeshore communities, and county governments. One facility is more cost-effective than two or three, especially as regulations become more stringent. It's critical to look beyond immediate concerns to the overall, long-term best solutions."

How it works

In the Green Lake area, wastewater is collected and transported to the wastewater treatment facility through a network of underground pipelines. The wastewater is moved by gravity through approximately 10 miles of pipes 8" to 24" in diameter. When pipeline depth necessitates a lift station, the wastewater is pumped to shallower pipelines and gravity flow continues. Eventually all the wastewater flows to the main lift station, where it is pumped to the treatment facility.



A wealth of water resources... *Protect them.*

Minnesota has...

- 6,564 rivers and streams, totaling 92,000 waterway miles.
- 4 major rivers: the Mississippi River, Minnesota River, Red River, and St. Croix River.
- 11,842 lakes of more than 10 acres (4,967,510 total acres).
- 5 major lakes: Lake Superior (borders north eastern Minnesota), Lake of the Woods (straddles Minnesota's border with Canada), Red Lake, Mille Lacs Lake and Leech Lake.
- 1 recreational boat for every 6 people, more than any other state.
- 2.3 million people who go fishing.

Source: Minnesota Department of Natural Resources

www.bolton-menk.com

BY DESIGN

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

PRESORTED
FIRST CLASS MAIL
U.S. POSTAGE
PAID
Owatonna, MN
Permit No. 110