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Performance of Alternative Wastewater Systems in Minnesota

How reliable *are* alternative wastewater systems?

This is a legitimate question, and can be answered by turning to the Discharge and Monitoring Reports (DMRs) and County permit reports for alternative treatment facilities. DMR and County reports are required by permit and track system performance, as reported by the system operator. To assess the performance of alternative treatment facilities, we collected data from the monitoring reports for 74 systems in Minnesota through NAWE and EcoCheck (a decentralized wastewater operations company). The combined dataset included projects designed by several engineering companies and operated by multiple wastewater operators. We examined the compliance status of systems in both the private and public sector, and compared these results against the state-wide average compliance for small treatment facilities.

Performance of Wastewater Treatment Facilities in Minnesota during 2005.

System Type	Number of Systems	Percentage of Facilities in Significant Compliance[1, 2]
Small NPDES point-source facilities	not applicable	90%
Alternative (privately owned)	64	95%
Alternative (publicly owned)	10	70%

1. For a NPDES point-source wastewater facility, "significant compliance" is defined by the Minnesota Pollution Control Agency as not exceeding effluent pollutant limits more than twice in a 6-month period.
2. For an alternative wastewater treatment facility, "significant compliance" was defined by NAWE as not exceeding effluent pollutant limits more than twice in a 12-month period.

The average state-wide compliance rate for small National Pollutant Discharge Elimination System (NPDES) systems that discharge to surface water is 90%, which is in line with state goals (MPCA, 2006). At 95%, the compliance rate for privately-owned alternative wastewater systems is higher than the compliance rate for small, NPDES-permitted facilities. Publicly owned alternative treatment systems surveyed, on the other hand, have a compliance rate of only 70%.

There are considerably more privately-owned alternative wastewater systems than publicly-owned systems in Minnesota. The six-fold difference in the number of private versus public systems in this survey is fairly representative of market conditions in Minnesota.

If compliance was an inherent problem with alternative wastewater systems, compliance rates should be about the same between public and private systems. The fact that alternative systems are performing quite well in the private sector indicates that alternative systems do, in fact, work. The lower compliance rates with publicly-owned systems seem to be an indication that these systems do not receive the same level of operation and maintenance as private systems.

Why do we need alternative wastewater systems?

Minnesota has a tremendous need for wastewater infrastructure to protect public health and water quality. Although Minnesota has 786 existing municipal wastewater systems, there are roughly 679 communities still unsewered in the state (MPCA, 1999). Unsewered communities mainly rely on disposal systems that discharge raw sewage or partially treated wastewater to the environment. The majority of unsewered communities in Minnesota (74%) are unincorporated. Because these communities are small and have limited experience with infrastructure management, conventional wastewater treatment technologies are often too expensive and too complex to be cost-effective solutions.

In the private sector, many development areas in the state are outside of municipal sewer districts or cannot be developed using individual septic systems. At the present time, there are approximately *six* alternative wastewater systems being constructed in the private sector for every *one* completed in the public sector.

The combination of public and private systems makes alternative systems the largest source of new wastewater permit applications received by the Minnesota Pollution Control Agency. Based on demographics and population growth, it is clear that alternative wastewater systems must continue to play a large role in meeting the needs of our unsewered communities and solving Minnesota's water quality problems.

Moving Forward

Constructing an alternative wastewater system, like any other type of infrastructure, is a long-term commitment. Residents should feel comfortable asking questions about the options available to them, and should be prepared to take ownership in maintaining their wastewater treatment system. This responsibility starts very early in the process, and it is important to take into account both capital (up-front) costs as well as annual operation and maintenance costs when deciding on a wastewater treatment system.

Understanding the valuable role alternative wastewater systems can play and how they are operated and maintained is critical in making sound decisions that will continue to help people and the environment. NAWE remains committed to solving environmental problems through the appropriate use and management of decentralized wastewater treatment technologies.

If you are interested in more information, please contact us at 651-255-5050 or email at contact@nawe-pa.com.

References

Minnesota Pollution Control Agency (1999) *Unsewered Communities: 1999 Legislative Update*. St. Paul, Minnesota.

Minnesota Pollution Control Agency (2006) *Quarterly Progress Report: October 2005 – December 2005*, MPCA Environmental Results Management Team: St. Paul, Minnesota.