

HAMILTON COUNTY, OHIO

PROBLEM

Potential public health threats posed by bacteria and viruses in surface waters prompted the Hamilton County Board of Health to investigate some 10,000 mechanized onsite wastewater systems. The inspections revealed that 3,400 (34%) of the systems—mostly serving individual homes—were substandard or malfunctioning.

SOLUTION

The Hamilton County General Health District upgraded its onsite wastewater program to include operating permits and routine inspection requirements to maintain system performance.

Hamilton County General Health District
250 William Howard Taft
Cincinnati, OH 45219
www.hamiltoncountyhealth.org

CONTACT

Christopher Griffith,
Director Water Quality
p: (513) 946-7866
e: Christopher.Griffith@hamilton-co.org



OVERVIEW

In 1993, the Hamilton County Board of Health adopted more stringent rules to better manage an estimated 20,000 individual wastewater

systems, half of which were aeration units discharging to soil absorption fields or surface waters. The board has since adopted additional changes to its program, which now consists of the following:

- **Routine inspections for treatment systems**
- **Renewable operating permit requirements**
- **Maintenance contract requirements**
- **An integrated database and geographic information system (GIS) used to track system location and condition**

MAINTENANCE CONTRACTS AND INSPECTIONS

The Hamilton County General Health District approves plans, issues permits, and conducts inspections for all individual and small flow treatment systems (with the exception of the cities of Cincinnati, Norwood, Springdale, and Sharonville).

Individual systems are inspected every five years, while mechanical systems, such as mounds, dosed leach lines, and aerobic treatment units, are inspected once per year. The Health District issues one-year or five-year renewable operating permits based on the system's complexity. The county is authorized to revoke permits for noncompliance; penalties include injunction, criminal prosecution, or other measures if required corrective actions are not taken. Owners of mechanical systems are required to have annual maintenance, monitoring, and service contracts. Maintenance providers must be registered, bonded, and must meet specific training requirements.

INTEGRATED GIS DATABASE

Hamilton County developed an integrated GIS database to track the location and condition of individual and clustered systems. The county also uses the database to compare any waterborne disease outbreaks with the latest system inspection surveys and collector line sampling results.

FUNDING SOURCES

The county's 2008 decentralized wastewater program budget was \$1.24 million, funded by \$850,000 in user fees and \$390,000 from the Hamilton County Storm Water District. Fees include \$40 for inspecting mechanical systems and \$85 for inspecting

conventional, gravity-flow, individual systems. Legislation authorizing property liens has helped to eliminate delinquent inspection fees.

Results

The program has identified and required the repair/replacement of thousands of noncompliant systems, many of which were discharging poorly treated sewage to area streams or directly to the ground surface. Since its inception, more than 2,300 malfunctioning systems have been replaced and over 32,000 system repairs have been completed.

Studies conducted in 2000 and 2001 found a 54% improvement in suspended solids, a 36% improvement in biochemical oxygen demand, and a 60% improvement in fecal coliform over baseline data collected five years earlier.

In addition, mechanical system malfunctions dropped from a high of 44% to a consistent and predictable rate of around 18%. Non-mechanical system malfunctions were over 23% in 2003 and have currently dropped to 2.6%. Onsite sewage treatment system nuisance complaints dropped from 371 in 2003 to 258 in 2009.

References and Resources

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