

ON-SITE SEWAGE DISPOSAL SYSTEM MANAGEMENT

Design, placement, and maintenance of on-site sewage disposal systems are important components in evaluating a community's approach to sanitary sewer planning and infrastructure. On-site sewage systems are an important component of sewer infrastructure and a common form of wastewater treatment systems in less densely populated areas. Commonly called septic systems, they are self-contained systems comprised of an underground tank that holds waste and a drainfield which disperses wastewater through tiles into the soil.

There is a significant amount of evidence demonstrating that failing septic systems impact groundwater and surface water quality. Most notably, failing systems can contribute to the bacteria problem which is limiting use of numerous local beaches in Southeast Michigan.

The *Water Quality Management Plan for Southeast Michigan* notes that when properly designed, located, installed, operated, and maintained, septic systems offer an alternative to sewers and municipal wastewater treatment plants. However, this also means that septic systems will constrain the amount and pattern of development in rural areas.



Sewage disposal facility in Madison Heights.

KEEPING IT CONNECTED

On-site sewage disposal systems are an important component of Southeast Michigan's sewer infrastructure. When updating the community's master plan, consider incorporating sewer planning, including on-site sewage disposal systems, into the master plan.

Planning and Regulatory Considerations

Michigan law states, in part, that . . . "The discharge of any raw sewage of human origin, directly or indirectly, into any of the waters of the state shall be considered prima facie evidence of a violation of this part by the municipality in which the discharge originated unless the discharge is permitted by an order or rule of the department. If the discharge is not the subject of a valid permit issued by the department, a municipality responsible for the discharge may be subject to the remedies provided in section 3115." (Source: 1994 Act 451, Sec. 3109 (2), as amended.)

Municipalities are, therefore, responsible for ensuring that on-site sewage systems within their jurisdiction are operating properly and not contributing to water pollution problems. County health departments, through their county sanitary codes, issue permits for installing, repairing and replacing septic systems. In addition, they review proposed subdivision plats to determine if private on-site water and sewage disposal is feasible and adequate.

Phase II of the federal storm water program requires National Pollutant Discharge Elimination System (NPDES) storm water permits for communities in urbanized areas with populations under 100,000 and for construction sites greater than one acre in size. In accordance with this rule, over 170 Southeast Michigan communities must apply for an NPDES storm water permit from the Michigan Department of Environmental Quality. As part of this permit, communities must have a mechanism in place to identify and correct failing on-site sewage disposal systems. Some counties have initiated a time-of-sale inspection program to ensure continued functionality of on-site systems (see Wayne County case study).

Tools for Managing On-Site Sewage Disposal Systems

Numerous tools are available for local communities implementing on-site sewage disposal systems:

- Incorporate on-site disposal systems into plans and ordinances.
- Include on-site disposal systems in the site plan review process.
- Coordinate permit issuance.

- Monitor and inspect systems.
- Ensure proper operation and maintenance.

Incorporate on-site disposal systems into plans and ordinances

Local governments can direct development to areas which are likely to have suitable soils and groundwater conditions for septic systems.

- Identify areas unsuitable for septic systems in local master plans. This should be done in conjunction with the community sewer plan to ensure adequate sewage transport and treatment capacity will be available (see chapter on Sewer Infrastructure Planning). Soil suitability for septic systems can be determined through the use of soil data and maps available through soil conservation districts in each county. SEMCOG also maintains computerized maps of soils.
- Establish zoning district density regulations (number of dwelling units/acre). Density of development (and septic systems) can affect the function of systems. The use of overlay zoning could be used to regulate density based on soil suitability.
- Establish septic system setback requirements from lakes, rivers, and streams that exceed county sanitary code requirements in the zoning ordinance to further water quality protection. Figure 18 shows a septic system and a recommended minimum setback from a water body.

Including on-site disposal systems in the site plan review process

Review for potential septic system problems should become a part of local communities' site plan review processes to ensure compliance with community stan-

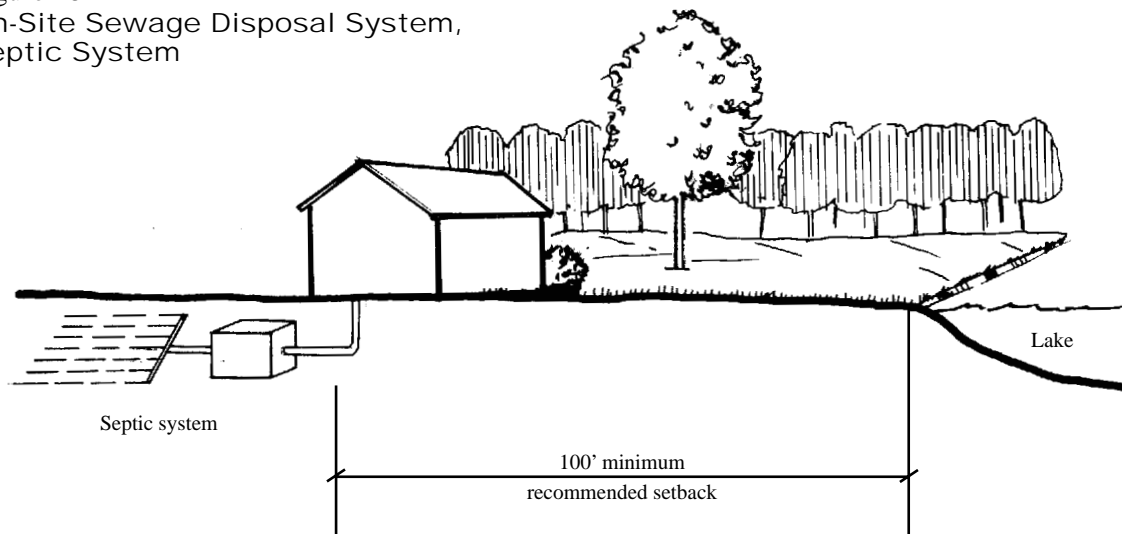


Oakland County's Septage Unloading Facility located in Pontiac provides a convenient, controlled, and cost-efficient process to dispose of septage from residential septic tanks and sediment from municipal catch basins. The facility features easy access for loading and unloading septage, diversion provisions for storm water surface runoff, and watertight construction to prevent septage leaks and groundwater infiltration.

dards and policies. The following questions should be addressed in the review process:

- What types of soils and groundwater conditions are found on the site? Are natural conditions suitable for on-site sewage disposal tanks?
- Will steep slopes create problems for on-site sewage disposal systems?
- Will on-site sewage disposal systems be located within 100 feet of any lake, stream, or river?
- Will on-site sewage disposal systems be located uphill from water supply wells, posing threats to drinking water supplies?

Figure 18
On-Site Sewage Disposal System,
Septic System



Source: SEMCOG.

- Will on-site sewage disposal systems be located in storm water runoff pathways? Could overbank flooding from nearby streams create septic system problems?
- Is there room on the development site for a replacement drainfield?
- Is a road available on the site for maintaining the on-site sewage disposal system? Is there convenient access to the tank cover for regular inspection and maintenance?

Verification of county health department approval for the use and siting of septic systems should be required prior to local approval of site plans or preliminary plats. This will ensure that site planning and development proceeds in accordance with an approvable on-site sewage disposal system.

Coordinate permit issuance

Local government permit issuance should be coordinated with the process used by the county health departments.

- County septic system installation permits should be obtained before issuing of building permits (as required by the State Construction Code).
- County final septic system inspection and approval should be completed before an occupancy permit is issued by the local government.

Monitor and inspect systems

In addition to periodic (time of sale) inspections of septic systems, local governments can assist and support county enforcement efforts by helping to identify the location of on-site sewage disposal system problems in the community and notifying county health officials. In areas served by on-site sewage disposal systems, surface water quality monitoring programs should be modified to identify pollution from potential on-site sewage system failures.

Ensure proper operation and maintenance

Local governments, in cooperation with county health departments, could sponsor workshops and prepare brochures to make residents aware of the importance of maintaining septic systems. Local governments and county health departments together could establish septic system maintenance districts that call for regular maintenance and repair and creation of homeowner maintenance education programs. Property owners in a district would pay a fee to the responsible government agency for inspection and maintenance services. This service may also include contracting to pump out or repair the septic system.

CASE EXAMPLE

On-Site Sewage Disposal System Evaluation and Maintenance Ordinance

Community: Wayne County

Contact: Stephen Tackitt, (734) 727-7432

In September 1999, Wayne County passed an ordinance implementing a program to minimize seepage from septic systems into the storm water drainage system. To accomplish this, any residential or commercial establishment that depends on an on site sewage disposal system must have the system evaluated prior to the time of sale or transfer of the property. The owner, buyer, real estate agent, registered evaluator, septage servicer, the Wayne County Department of Public Health, and the local municipality all have specific responsibilities in implementing this ordinance.

Sanitary Code

Community: Monroe County

Contact: Carol Austerberry, (734) 240-7900

The Monroe County Health Department's Sanitary Code has a chapter containing sewage disposal regulations. An important aspect of this code is the establishment of certain specifications of on-site sewage disposal facilities. This section details the requirements that must be met in order to acquire an on-site sewage disposal permit. Permits will not be granted in situations where:

- A publicly operated sewer system is available.
- Property in question is too small to allow proper isolation distances from property lines, surface waters, and water supply systems.
- Property contains soils with high proportions of silt and/or clay.
- Natural ground level water is less than two feet from the natural ground surface.
- Property is subject to flooding by inclusion within the 100-year floodway, as determined by the United States Geological Survey.
- Slopes are greater than 12 percent.
- Conditions exist or may be created which may endanger the public health or environment.
- Septic tank would be inaccessible for cleaning or inspection.

The sewage disposal section of the code also addresses regulations such as requiring approved sewage disposal facilities, other requirements needed to acquire a permit, and establishing licensing and bonding requirements for sewage disposal contractors.

Additional Resources

Center for Watershed Protection. "Dealing with Septic System Impacts." *Watershed Protection Techniques*. 32(1):233-238.

"Health Departments Get Tough on Septic Systems." *Planning and Zoning News*. Vol. 8. No. 6. April 1990.

Johnson, Barry, P.E., Richard Fleece, R.S., Steve Tackitt, R.S. *Management of On-Site Sewage Disposal Systems: A Comprehensive Approach*. National On-Site Wastewater Recycling Association at Grand Rapids. November 2000.

Michigan Department of Natural Resources, et al. "Septic System Management Guidelines." *Protecting Water Quality Through the Development Review Process: Recommended Guidelines for Local Government Officials*. Handout. April 1989.

Michigan State University Extension. www.msue.msu.edu/waterqual/wq-mats.html

National Small Flows Clearinghouse. "Maintaining Your Septic System — A Guide for Homeowners." *Pipeline*. Volume 6, Number 4. Fall 1995.

National Small Flows Clearinghouse. "Septic Systems — A Practical Alternative for Small Communities." *Pipeline*. Volume 6, Number 3. Summer 1995.

National Small Flows Clearinghouse. "Site Evaluations." *Pipeline*. Volume 11, Number 2. Spring 2000.

"On-Site Sewage Disposal: Saying No at the Local Level." *Planning and Zoning News*. Vol. 8. No. 6.

Planning and Zoning Center, Inc. "Septic System Maintenance." *Community Planning Handbook: Tools and Techniques for Guiding Community Change*. Michigan Society of Planning Officials. 1991.

Wayne County On-Site Disposal System Evaluation and Maintenance Ordinance, September 1999. www.waynecounty.com/hcs/phealth/enviro/well_ordinance.htm

Wyckoff, Mark A. and Warbach, John D. "Septic Tank Inspection Regulations." *Development Guidelines to Protect Community Character*. Training Workshop. 1993.