

CHAPTER 5

ONSITE SEWAGE TREATMENT

Introduction

Onsite sewage treatment includes the treatment and disposal of sewage on the same property as a residence, rather than at a centralized (off-site) treatment plant which serves many residences. The purpose of onsite sewage treatment is the same as that of centralized wastewater treatment. Systems should provide adequate and cost-effective removal of pollutants and pathogens from wastewater before sewage effluent enters ground or surface waters. Onsite sewage treatment should do this in a way that avoids odor and other nuisance conditions.

Public health regulations are enforced at the local level by a Local Health District. A District may be at the municipal or county level. In the TMACOG region, each county has a Health District. The only municipal Health District in the region is the City of Toledo. Each District has a Board of Health; the individuals on the Board set policy for the District, approve its budget, and employ the Health Commissioner. The Health Commissioner is the executive officer for the Health Department, which employs Registered Sanitarians and support staff to administer regulations. The Lucas County and City of Toledo Health Districts merged into the Toledo/Lucas County Health Department and are referred to as “Lucas County” in this chapter.

Septic tanks with soil absorption or leaching tile fields are the most common type of onsite sewage treatment system. This type of home sewage treatment has been in existence for several decades in both rural and suburban areas. A typical residential septic tank has a volume of 1,500 gallons. Older home sewage treatment systems in use include aerators and septic tanks followed by subsurface sand filters. These two latter types of systems both discharge effluent to a stream or storm sewer.

Effective January 1, 2007 the Ohio Department of Health implemented new sewage treatment system rules. These regulations set statewide standards for the design, operation, and maintenance of onsite systems, referred to as Sewage Treatment Systems (STS) or “Household STSs” (HSTS). The regulations create a new category, “Small Flow Onsite Sewage Treatment System,” or SFOSTS. These systems are defined as STSs that are not household units, treat less than 1,000 gallons of sewage per day. They do not require EPA NPDES permits because their design includes soil absorption systems as part of the treatment process, and do not discharge off-lot.

Effective July 1, 2007 most aspects of the new sewage regulations were suspended; the suspension is effective until July 1, 2009. The legislation also directed a Technical Advisory Committee to actively pursue and consider new, innovative and cost-effective technologies for household sewage treatment systems, and conduct pilot projects to assess their effectiveness.

This chapter also covers small, privately-owned sewage treatment plants. Most of these systems are extended aeration “package” plants, which treat sewage at a business or development that is too large to be served by a septic system and does not have public sewers available. Generally, plants are rated from 1500 gpd up to about 100,000 gpd. Private wastewater treatment plants include several types of systems — trickling filters, lagoons, or a settling tank followed by surface filter. Generically we refer to all small private sewage treatment systems as “package plants”.

Onsite effluent disposal has been identified as a significant water quality issue in the TMACOG area. Sampling data indicate high bacterial counts in many suburban and rural waterways. The City of Toledo’s sampling program, ongoing since 1968, shows bacterial counts in the Ottawa River and Swan Creek flowing into the city commonly exceeding water quality standards. Lake Erie beaches experience high bacterial counts and subsequent postings, usually after storms. Septic systems have been identified as a major source of the contamination.

This chapter includes policies set by each Health Department, including:

1. A description of the problems of onsite sewage treatment in the TMACOG region;
2. Areawide policies affecting onsite sewage treatment;
3. Regulatory programs presently in effect or recommended;
4. Recommended improvements for existing programs;
5. Designation of Critical Sewage Areas

Water Quality Impacts

Incompletely treated or raw sewage impacts ground and surface water quality in several different ways. The recommendations of this Plan are primarily based on three pollutants in sewage: nitrogen, phosphorus, and pathogens.

Nitrogen and phosphorus in their various forms are considered pollutants because they are nutrients that contribute to the eutrophic state of Lake Erie, and accelerated nuisance algae growths. Nutrients can have similar negative impacts on the aquatic habitat of streams. Nutrients are a common pollutant that can come from many sources besides onsite sewage systems. Municipal and industrial wastewater effluents, urban stormwater runoff, and agricultural runoff all contribute significant nutrient loadings to Lake Erie and its tributaries. Please see Chapter 1 for a discussion of nutrients.

Nitrates

Nitrates are a water quality problem because levels over 10 mg/l make water unsafe for certain individuals to drink. Such concentrations of nitrates interfere with the body's ability to transfer oxygen, with a condition called Methemoglobinemia, or "blue baby syndrome." Infants are the most susceptible to nitrates. Further information on nitrate health impacts is given in the Agricultural Runoff Chapter of this Plan.

Incompletely treated sewage contains high levels of nitrates. Since nitrates are highly soluble, they can contaminate groundwater. A failed septic system can contaminate a well if they are located too close together. In a community that is served by individual septic systems and wells, a large number of failed septic systems can threaten the local aquifer and endanger all the wells. Septic discharges to streams endanger downstream drinking water supplies.

Phosphorus

Phosphorus has been identified as the critical nutrient that resulted in eutrophication and algal blooms in Lake Erie in the 1960s and 1970s. High phosphate levels can encourage nuisance algae growths in streams, and hinder some pollution-intolerant species of fish. The main water body of concern for phosphorus impacts, however, is Lake Erie. Onsite systems are a significant, but not the largest, source of phosphorus entering Lake Erie from the TMACOG planning area. Water quality impacts of phosphorus on Lake Erie are discussed in more depth in Agricultural Runoff Chapter of this Plan.

Pathogens

Incompletely treated sewage is a potential source of disease-causing organisms, and until the late nineteenth century was a common cause of illness in this country. Sewage contains five categories of parasitic organisms that are infective to humans: bacteria, protozoa, worms, viruses, and fungi. Two bacterial diseases carried by sewage are typhoid fever and cholera. There were outbreaks of cholera in northwest Ohio before public sewerage systems came into use. Other waterborne diseases include dysentery, infectious hepatitis, numerous others.¹

¹ Water and Wastewater Engineering, Volume 2, Fair, Geyer, and Okun, John Wiley & sons, 1958; pp 19-4 through 19-9

When testing water for the presence of sewage pathogens, tests are usually run for fecal coliform or *Escherichia coli* (*E. coli*) bacteria. Fecal coliform are “indicator bacteria.” They are generally not disease-causing organisms themselves, but are present in feces in large quantities, and are therefore easy to detect. *E. coli* is a specific species of bacterium that lives in the intestinal tract of warm-blooded animals. In the past, fecal coliform was the most commonly used standard for detecting sewage bacterial contamination. In recent years *E. coli* has become increasingly accepted as a standard and is widely used.

A 2001 study evaluated effluent quality from a variety of onsite sewage treatment systems in seven counties of northeast Ohio.² Among its findings were that between 20%-33% of onsite systems installed between 1979-1998 had observably poor (cloudy, black, and/or odorous) effluent. However, two-thirds of effluent collected from onsite systems did not meet minimum regulations for fecal coliform. The study’s conclusion was that even clear sewage effluent is often high in bacteria — clear effluent does not necessarily mean good effluent.

A smaller-scale study in Lucas and Wood Counties³ conducted a total of approximately 200 dye tests on residential septic systems in priority areas identified by the Health Departments., and septic outfalls identified by the stream sampling. Approximately one out of every 4 dye tests (out of ~200 conducted) was found to be positive over the course of the septic system dye testing.

In 2008 statewide study conducted by the Ohio Department of Health⁴ includes these conclusions:

- 23% of Ohio sewage systems are failing and 13% are projected to fail within next 5 years
- Northwest Ohio reported the largest number of failing systems at 26%
- Typical life expectancies for HSTSs are 30-40 years
- Typical HSTS failures are due to: Age, space limitations, soil limitations, & high seasonal water tables

Onsite Treatment Systems

Design Standards

In the TMACOG region, most onsite systems installed consist of a septic tank and leaching tile field. The septic tank provides primary treatment by settling out heavy solids (sludge) and trapping floating materials (scum). Solids retained in the septic tank have to be periodically removed by pumping. Limited biological treatment takes place in the tank through anaerobic bacterial action. Septic tank effluent enters the leaching tile field, where microorganisms in the soil provide final biological treatment and destroy pathogens. The leaching tile field is a series of distribution pipes laid in trenches to provide for soil absorption of the effluent from the septic tank.

The effectiveness and longevity of an onsite system depends on its proper design for site and soil conditions. With a preponderance of slow-draining soils and high water tables in the region, systems can fail due to lack of effluent drainage. Before system installation, the Health District conducts a site review and soil evaluation to determine the feasibility of soil absorption. Feasibility of soil absorption depends on whether the soil distance between the leaching tile and a limiting layer (e.g., bedrock, hardpan, or water table) is adequate to treat the effluent.

² *Northeast Ohio Home Sewage and Semi-Public Sewage Disposal Systems Survey* NOACA, 2001

³ *Maumee River Area of Concern 2004 Stream & Septic Monitoring Study* Black & Veatch, Wood County Health Department, Toledo/Lucas County Health Department, TMACOG; October 2004

⁴ Ohio Department of Health, *Survey of Household Sewage Treatment Systems Operation and Failure Rates in Ohio*, June 2008 <http://www.odh.ohio.gov/ASSETS/CEDC2CD128054A3E95A3D5C282C5FC26/Rep2.pdf>

Onsite systems should not be permitted on new lots or new subdivisions where soil absorption is not feasible. Effluent discharges to surface waters may be permitted only for replacement systems where soil absorption is not feasible, and in compliance with NPDES requirements. New onsite systems require available space for a complete replacement system.

Availability and Accessibility of Public Sewers

Onsite sewage systems, SFOSTS, and package plants shall be abandoned and tapped when public sewers become available and accessible.

The designation of an accessible sewer is determined by consultation with the Designated Management Agency (DMA) responsible for sewage collection. It depends on the distance between the sanitary sewer and the house or business that would be served, and whether there are any physical barriers that render connecting it to the sewer impracticable.

The availability of a sanitary sewer system is determined by the DMA and OEPA/MDNRE. It depends on:

1. Whether the receiving sanitary sewer system has the capacity to transport and treat the additional sewage, and
2. Whether the sanitary sewer is a gravity sewer, an interceptor sewer, or a force main. Whether interceptors or force mains are available for tapping is a policy the DMA sets.

Sewers under the County Commissioners⁵ are accessible if within 200 feet of the building foundation. Ohio Boards of Health may establish more stringent “accessibility” distance rules.

Under a Regional Water and Sewer District the rule is to *“Require the owner of any premises located within the district to connect his premises to a water resource project determined to be accessible to such premises and found to require such connection so as to prevent or abate pollution or protect the health and property of persons in the district. Such connection shall be made in accordance with procedures established by the board of trustees of such district and pursuant to such orders as the board may find necessary to ensure and enforce compliance with such procedures.”*⁶

In Michigan, State Law authorizes local governments to require connection to a public sewer.

It is the policy of this *Areawide Water Quality Management Plan* that,

1. No private sewage treatment system shall be installed, maintained, or operated on any property accessible to a public sanitary sewerage system.
2. For the purposes of this Plan, “accessible to a public sanitary sewerage system” means
 - a. The DMA (see Chapter 3 for definition and list) responsible for public sanitary sewers in the Facility Planning Area will grant permission to connect to their system, and
 - i. A connecting point to the public sewer from the foundation wall of any structure with plumbing drains along the shortest direct line distance is within a specified distance. That specified distance is 200 feet unless a different figure is given in the table below of individual criteria for each county, or
 - ii. Ohio EPA or Michigan DNRE has determined that a public sanitary sewer is available, considering the distance to the sewer, physical barriers, ability of the sewerage system to transport and treat the wastewater, cost effectiveness, overflows from the sewer system, or other environmental or public health issues, or

⁵ Ohio Revised Code §6117.51(A)-(D)

⁶ Ohio Revised Code §6119.06(Z)

- iii. The Facility Planning Area has a policy that new subdivisions shall be required to connect to the public sanitary sewerage system, and may not be served by septic systems or package plants. This policy applies only to individual FPAs where the DMAs have requested it. Please see the individual FPA Descriptions in Chapter 4 of this Plan.

Locally Established Criteria for “Accessible” Public Sewers	
Lucas County, Ohio	Uses policy of jurisdiction responsible for sewers
Monroe County, Michigan	State Law authorizes local governments to require connection to a public sewer.
Ottawa County, Ohio	Existing residences must tie into an available gravity sewer; tying into a pressure sewer is not mandatory until there is a system failure or upgrade. New construction on a vacant lot must tie in if a sewer is available.
Sandusky County, Ohio	Must tap into an available public sanitary sewer that the Board of Health has determined to be accessible. The Board of Health will make a determination on a lot-by-lot basis, depending on DMA’s accessibility assessment, 208 Facility Planning Area, whether the site is in a Critical Sewage Area, density of housing units, and environmentally sensitive areas.
Wood County, Ohio	400 feet where the DMA determines a sanitary sewer to be available and accessible

Availability of Pressure Sewers and Force Mains

While Ohio law on availability is the same for gravity sewers and force mains, there are practical aspects that distinguish them. Whether interceptors or force mains are available for tapping is a policy the DMA sets. This 208 Plan recommends availability of connection to a pressure sewer or force main be based on criteria that include:

1. Whether sewer service is consistent with an adopted land use or comprehensive plan, and may be used to preserve habitat or natural areas, limit sprawl development, or minimize pollution from stormwater runoff. If sewer service is not consistent with a land use plan, the force main should not be included within an FPA. Sewer availability based on land use should result from a consistent policy of where development should or should not occur. It should not be used arbitrarily to favor or disfavor a particular type of business.
2. Pressure sewer systems, designed to receive flow from grinder pumps, should normally considered available for taps, unless there is a barrier or restriction.
3. Force mains, where the pipe and pumping system were designed to accept flow from grinder pumps, should normally be considered available for taps, unless there is a barrier or restriction.
4. Force mains, where the pipe and pumping system were not designed to accept flow from grinder pumps, may be available up to the flow and head capacity of its pumping station(s). An additional consideration is whether a precedent has been set for accessibility by allowing taps in the past.
5. Force mains may be tapped on a case-by-case basis, subject to approval by the DMA, on an emergency basis, especially to eliminate failed onsite systems where a replacement system is not feasible.
6. Where a force main is outside any FPA, it should be considered available per Local Health District regulations (e.g., the 200 foot rule), provided the force main has capacity and the DMA approves service connections unless a physical barrier renders tapping infeasible. Contractual or ownership restrictions may also render a force main inaccessible. In such a

case where service is extended outside an FPA boundary, the boundary should then be amended to include the served area.

Subdivisions and New Lots

In areas where a sanitary sewerage system is accessible, the policy of this Plan is that new sewage systems shall tap into that system, and new onsite systems shall not be permitted. Ohio EPA sets the criteria for determining accessibility. For proposed subdivisions of more than 25 lots, onsite sewage systems may be approved only with written documentation from Ohio EPA that a sanitary sewer is not accessible. A board of health may establish a policy to require this rule to smaller subdivisions.

Household sewage systems with off-lot discharges (i.e., requiring NPDES permits) are prohibited on new lots or lots in subdivisions. This Plan recommends siting restrictions for both to new and replacement sewage systems within:

- Floodways and 100 year floodplains
- Wetlands
- Isolation from public water system wells
- Areas with unsuitable site and soil conditions, such as exposed bedrock, steep slopes, and filled/disturbed areas where soil conditions may not be adequate to provide treatment.

It is recommended that boards of health review proposed subdivisions for any restrictions on the use of onsite sewage systems, and consult with appropriate DMAs to determine accessibility of sanitary sewers, and the TMACOG 208 Plan.

Statewide Regulations

Many policies and system design criteria are set by state regulation, in OAC §3701-29 or Michigan Compiled Laws Chapter 324. The County Health Board implements state regulations, and may exercise options allotted to it by the regulations. Note the discussion of “semi-public” sewage treatment systems under Ohio Administrative Code below. Policies that apply to residential septic systems under OAC do not apply to semi-public septic systems. Many policies that apply to household sewage systems also apply SFOSTSs. Statewide policies are outlined below.

Onsite Sewage System Policies and Criteria		
Septic System Policy	Ohio⁷	Michigan⁸
Minimum lot size (new systems)	In addition to isolation distances, the lot is required to have room for a complete replacement system	In addition to isolation distances between septic system and wells, waterways, and structures the lot is required to have room for a complete replacement septic system
Septic tank design criteria	The Health District reviews a site and soil evaluation to determine the feasibility, conditions, and limitations of a proposed onsite sewage system. An installation permit from the Health District is required before a new or replacement sewage system may be installed. Ohio Administrative Code specifies tank size, layout, and plumbing details and set criteria for soil absorption and percolation; leaching tile fields, curtain drains, leaching pits, and	Section 504 of the Monroe County Sanitary Code covers location, accessibility, and size of tank(s), effluent filter, and subsurface disposal system design.

⁷ OAC regulations apply only to septic systems under the jurisdiction of Local Health Departments and not to septic systems that are classified as “semi public” because they serve businesses.

⁸ Monroe County Sanitary Code: Chapter 5, Sewage Disposal, March 2001.

Onsite Sewage System Policies and Criteria

Septic System Policy	Ohio ⁷	Michigan ⁸
	<p>subsurface sand filters</p> <p>OAC requires 4' vertical separation between the bottom of a soil absorption system and bedrock. Leaching systems utilizing soil absorption or percolation shall not be installed where the texture, structure, or permeability of the soil is not suitable to provide internal drainage.</p> <p>Lucas County: Requires applicant to submit site and soil evaluation. Two foot vertical separation required between the soil absorption system and limiting layers; four foot vertical separation from bedrock is required. The Board may approve reduced vertical separation for perched seasonal high water, subject to provisions. The include installing the soil absorption system above the seasonal high water table, installing a curtain drain, and being subject to random sampling.</p> <p>Ottawa County: Staff conducts site evaluation for standard design. For alternate design, home owner is responsible for having evaluation professional conducted.</p> <p>Sandusky County: Requires applicant to submit site and soil evaluation. Health Department has the right to be present while it is conducted. Two foot vertical separation to limiting soil layer. Board may permit variance to 1' or to seasonal water table.</p> <p>Wood County: Staff conducts soil evaluation for standard design. For alternate design, home owner is responsible for having evaluation professional conducted. Vertical separation distance to limiting soil layer is anything greater than 0" to perched seasonal water table and anything greater than 2 feet to any other limiting conditions such as normal groundwater table, compacted till, or permeable sand.</p>	
Off-lot effluent discharge	Sewage systems that discharge effluent off-lot to surface waters are permitted primarily for replacements where soil absorption systems are not feasible. Effluent discharges to surface waters must comply with NPDES regulations and quality standards.	Health Department may block off discharges of untreated sewage following posting of at least 5 public notices for at least 30 days.
Home aerators	As a treatment device that discharges effluent off-lot to surface waters, home aerators may be	Mechanical sewage treatment systems must be approved before installation. Approval

Onsite Sewage System Policies and Criteria		
Septic System Policy	Ohio⁷	Michigan⁸
	used only as replacement systems, and meet NPDES requirements. A home aerator by itself is unlikely to meet NPDES effluent quality standards.	requires a current maintenance contract and a performance bond.
Sewage system operation and maintenance and inspections	<p>An operation permit requires the owner to have a service contract if the sewage system is subject to an NPDES permit.</p> <p>Inspection and approval by health department before covering distribution tiles is required before a sewage treatment system may be put into use.</p> <p>Principal responsibility for the operation and maintenance of the sewage system lies with the owner.</p>	<p>Inspection and approval by health officer before covering distribution tiles is required before a sewage treatment system may be put into use.</p> <p>Minimum (statewide) program requirements include evaluation of existing onsite sewage systems. Each year the County Health Department inspects existing systems equal to 10% of the sewage permits issued the previous year.</p> <p>In 1999 evaluations were conducted at home where the property owner requested other services, such as well inspections, FIA evaluations, proposed swimming pools or additions to the home. Of 56 systems evaluated, 52 were found to be functioning properly at the time of the study.⁹</p> <p>Monroe County Sanitary Code §501.08 requires private sewage disposal systems to be maintained in satisfactory operating condition at all times. Septic tanks are required to have sludge pumped out as necessary to prevent carry-over of solids into the leaching field.</p>
Abandonment	All tanks must be removed by a registered septage hauler. Tops of tanks must be removed, at least one side collapsed, and filled to ground surface with suitable material. Owner must notify the Health District of the abandonment.	Tank must be emptied and filled to ground surface with suitable material
Variances	<p>Board of Health may grant variances when</p> <ol style="list-style-type: none"> 1. Regulations cause a hardship; although variances shall not be granted that defeat the spirit and general intent of the regulations. 2. Experimental systems may be installed if the Health Department approves the proposed design 	
Septage disposal	No statewide regulations. County Health Departments may issue regulations.	If source of septage is within 15 miles of a public septage waste treatment facility, the septage must go that facility. US EPA "503" regulations apply as well.

⁹ Monroe County Health Department, Environmental Health Division memo of 10/2/2000 to MDEQ: "Sewage Report 2000"

Types and Regulation of Sewage Systems

Regulation of onsite sewage system in Ohio is divided among the Ohio Department of Health and Ohio EPA at the state level, and boards of health at the local (county) level. Responsibility for permitting and administering sewage systems depends on the size of the system, and whether it discharges treated effluent. These rules apply only to sewage systems permitted on or after January 1st 2007.

Onsite Sewage Systems in Ohio: System Types and Regulatory Responsibility				
System type	Defining criteria	Size (gallons per day treatment capacity)	Effluent discharge	Regulatory agencies
Home sewage treatment system (HSTS)	Serves a 1, 2, or 3 family residential dwelling	No criterion: determined by capacity of soil to absorb and treat effluent	None: soil absorbs and treats the effluent	ODH and local board of health
Discharging HSTS	Serves a 1, 2, or 3 family residential dwelling. Permissible only (1) where onsite soil absorption is not an option, and (2) replacement systems or new systems on lots created before 1/1/07	No criterion, but limited to 1, 2, or 3 family residential units.	Effluent is discharged off site. New or replacement systems are subject to NPDES requirements. Discharges that existed prior to 2007 are not covered by the OEPA General Permit at this time. Discharging systems may be required to upgrade on property transfer or other inspection, complaint, or in compliance with Stormwater Phase II NPDES "illicit discharge detection & elimination" requirements.	The local health district signs a Memorandum of Understanding with OEPA, the local health district may assist homeowners with access to HSTS General NPDES Permit coverage
Small Flow Onsite Sewage Treatment System (SFOSTS)	Onsite sewage system not qualifying as a "household" system because it serves multiple dwellings or a business	Less than 1,000 gallons per day	None: soil absorbs and treats the effluent	Local Board of Health may assume authority for SFOSTSs.
Semi-public disposal system ("package sewage treatment plant")	Sewage treatment system not served by a public sewerage system, and where soils will not accommodate an onsite system. Most are extended aeration treatment plants.	Less than 25,000 gallons per day ¹⁰	Treated effluent is usually discharged offsite to a stream or storm sewer. Effluent quality is subject to regulation under NPDES requirements	Ohio EPA; local board of health may contract with Ohio EPA to assume oversight of semi-public systems ¹¹

¹⁰ Ohio Administrative Code 3745-33-01 (KK)

¹¹ ORC §3709.085

Onsite Sewage Systems in Ohio: System Types and Regulatory Responsibility				
System type	Defining criteria	Size (gallons per day treatment capacity)	Effluent discharge	Regulatory agencies
Larger package plants	Same as semi-public package plants, but larger.	25,000 gallons per day or greater	Treated effluent is usually discharged offsite to a stream or storm sewer. Effluent quality is subject to regulation under NPDES requirements	Ohio EPA

In Michigan, state law stipulates that the municipality may be required to assume responsibility for managing the system (section 3109 of Part 31 of Michigan Public Act 451 of 1994).¹²

NPDES General Permits for Discharging Sewage Systems

Ohio sewage regulations permit new or replacement discharging 1, 2, and 3 family residential systems only subject to the requirements of an NPDES permit. Ohio EPA has issued a General Permit that applies to all such systems. Its provisions include:

- A discharging system is permitted only for replacement sewage systems where soil absorption is not feasible, or for new systems on lots created before January 1 2007 where soil absorption is not feasible
- A discharging system is permitted only where public sewers are not available and accessible
- A discharging system is not permitted where that discharge would conflict with a 208 Plan.
- A sewage system is ineligible for the NPDES General Permit if it is within 400 feet of a public sewer, and that sewer has capacity to accept the sewage system's flow.
- Effluent sampling and reporting is required annually. The initial 2007 permit set effluent standards at 18 ppm total suspended solids, 2.0/4.5 ppm ammonia summer/winter, 15 ppm CBOD₅, and 126 colonies *E. coli* (summer).
- Local boards of health may administer the permitting and management of NPDES General Permit sewage systems through a Memorandum of Understanding with OEPA.

Onsite System Policies set by Local Boards of Health

Septic systems serving single, two, or three family residences are regulated by County Boards of Health. Sewage treatment systems serving commercial establishments or residences with more than three families are regulated by Ohio EPA, described in the next section. Regulatory authorities for different types of sewage systems are given in the table above. Some authority may be assumed by local boards of health following agreements, commitments, or contracts. The following table summarizes policies established by boards of health in the TMACOG region.

¹² *Water Quality Management Plan for Southeast Michigan SEMCOG, October 1999*

Sewage System Management Policies of Ohio Boards of Health			
County	Memorandum of Understanding (MOU) with OEPA for discharging HSTS	Contract with OEPA for semi-public systems	Letter of commitment to assume authority for SFOSTS systems
Lucas County	Yes	No	Yes
Ottawa County	Yes	No	No
Sandusky County	Yes	No	No
Wood County	Submitted MOU to OEPA in January 2007	No	No

Most soils in the TMACOG region are not well suited for conventional septic systems. Suitability for sewage treatment is a characteristic given for each soil type in the County Soil Surveys. Mound systems are often used in shallow bedrock or high groundwater areas. Depending on soil conditions, these systems may require a variance from the Board of Health.

Demand for rural home sites encourages use of onsite sewage systems. Research and long-term testing of innovative and experimental systems is needed to determine what designs will work best over the long term in our region's soils.

The following table gives policies for off-lot discharging system designs. Many such systems were approved under Ohio sewage regulations prior to 2007. These systems still exist and continue to be used. Off-lot discharging systems are now allowed in Ohio only as replacement systems where soil absorption is not feasible, and these systems are subject to NPDES permitting requirements.

Sewage System Policies		
County	Home aerator systems	Septic Tanks with Subsurface sand filters
Lucas County	Not allowed for new systems. Use for replacement systems is under the provisions of state regulations, and requires an MOU with Ohio EPA.	Not allowed for new systems. May be permitted for replace systems where an on lot system is not possible, provided the system does not cause a nuisance, and meets effluent quality standards set by Toledo/Lucas County Health Department or Ohio EPA.
Monroe County	Allowed with engineered plans submitted and approved.	Allowed with engineered plans submitted and approved.
Ottawa County	Not allowed for new systems. Use for replacement systems is under the provisions of state regulations, and requires an MOU with Ohio EPA, which Ottawa County has signed.	Not allowed for new or replacement systems.
Sandusky County	Not allowed for new systems. Use for replacement systems is under the provisions of state regulations, and requires an MOU with Ohio EPA.	Not allowed for new or replacement systems
Wood County	Not allowed for new systems. Use for replacement systems is under the provisions of state regulations, and requires an MOU with Ohio EPA.	Not allowed for new or replacement systems

Policies

- All onsite sewage treatment systems must be properly operated and maintained in order to protect water quality and public health.

- Conduct research and demonstration projects to determine what designs work the best long term in heavy silt/clay, shallow bedrock, and/or high groundwater soils.
- Financial assistance may be available to upgrade onsite systems on either a grant or cost-share basis. Two programs that can help individual homeowners include the USDA/Rural Development “504” program, and the HUD “CHIP” program through the Ohio Department of Development. Both of these programs have financial need criteria. Other programs may be developed on a competitive basis (e.g., US EPA §319 non-point source grants) or as special projects.

Sewage System Management Issues

A primary reason why onsite sewage systems, especially pre-2007 septic tanks and aeration systems, are not working properly is because of existing management practices.

Better control over the operation and maintenance of septic systems is needed. Only a small percentage of all of the home sewage systems are monitored to see if they are properly functioning. The property owner is responsible for the maintenance, inspection and replacement of any given sewage treatment device located on his property. As a result, the individual’s knowledge of the system and perceived notion of its needs for proper functioning largely determine the effectiveness of the system.

Although the average dwelling unit has a structural life of some eighty years, the useful life of a household sewage system may be twenty years if properly maintained. The primary causes of failure are soil clogging and hydraulic overload. Proper maintenance helps prevent failure by soil clogging. As a broad average, septic tanks should be pumped about every three years. Pumping frequencies depend on the number of people in a house, size of tank, and whether or not there is a garbage disposal. A septic tank is considered full and in need of pumping when it is full with 1/3 each of scum/grease, liquid, and sludge. OSU Extension¹³ gives the following recommendations:

Recommended Septic Tank Pumping Frequencies (Years)										
Tank Size (gal)	Household Size (Number of People)									
	1	2	3	4	5	6	7	8	9	10
500	5.8	2.6	1.5	1.0	0.7	0.4	0.3	0.2	0.1	---
750	9.1	4.2	2.6	1.8	1.3	1.0	0.7	0.6	0.4	0.3
1000	12.4	5.9	3.7	2.6	2.0	1.5	1.2	1.0	0.8	0.7
1250	15.6	7.5	4.8	3.4	2.6	2.0	1.7	1.4	1.2	1.0
1500	18.9	9.1	5.9	4.2	3.3	2.6	2.1	1.8	1.5	1.3
1750	22.1	10.7	6.9	5.0	3.9	3.1	2.6	2.2	1.9	1.6
2000	25.4	12.4	8.0	5.9	4.5	3.7	3.1	2.6	2.2	2.0
2250	28.6	14.0	9.1	6.7	5.2	4.2	3.5	3.0	2.6	2.3
2500	31.9	15.6	10.2	7.5	5.9	4.8	4.0	4.0	3.0	2.6

Note: Based on year-round residences. More frequent pumping needed if garbage disposal is used.

Septage Disposal

Septage from domestic septic systems is subject to US EPA “Part 503” sludge regulations. Removal and disposal of solids and liquids (septage) from septic tanks poses a final problem for onsite septic systems. Septage treatment and disposal options include:

¹³ OSU Extension Bulletin AEX-740-98, “Septic Tank Maintenance”

- Discharge to a municipal wastewater treatment plant that is designed to treat septage
- Apply to agricultural land for agronomic benefit, and in a manner that does not cause a public health nuisance, and with the following provisions:
 - The site slope does not exceed 8%
 - at least 3 feet of soil above groundwater or rock
 - soil is free of conditions that could allow septage to contaminate groundwater or run off to surface waters
 - The local board of health inspects the site before application
 - Isolation distances between the septage application site and dwellings, property lines, water systems, waters of the state, and sinkholes or wells.
 - Septage application rate may not exceed the annual nitrogen use of the site's vegetation. Phosphorus testing is required every second year.

US EPA "503" regulations include crop, grazing, and site access restrictions when Domestic septage is land applied without treatment:¹⁴

- Food crops with harvested parts that touch the domestic septage/soil mixture and are totally above ground shall not be harvested for 14 months after application of domestic septage.
- Food crops with harvested parts below the surface of the land shall not be harvested for either (1) 20 months after application if domestic septage remains on the land surface for 4 months or longer, or (2) 38 months after application if domestic septage remains on the land surface for less than 4 months, prior to incorporation into the soil.
- Feed, fiber, and food crops shall not be harvested for 30 days after application of the domestic septage.
- Grazing animals shall not be allowed to graze on the land for 30 days after application of domestic septage.
- Public access to land with a low potential for public exposure shall be restricted for 30 days after application of domestic septage. Examples of restricted access include remoteness of site, posting with no trespassing signs, and/or simple fencing.

Some wastewater plants accept septage, but most do not. Because septage is septic, and a high-strength waste, some treatment plants are not able to accept it. There is a lack of plants with septage handling facilities in Northwest Ohio. Current septage policies are provided in the following table.

County	Health Department's Septage Land Application Policies & Practices	Wastewater plants that accept Septage
Lucas County	Prohibited unless no wastewater plant is available to accept septage	Toledo
Monroe County	Land application acceptable; MDNRE issues permits	None in Bedford, Erie, or Whiteford Townships
Ottawa County	Land application is not currently used; considered by Board on a case by case basis.	None
Sandusky County	Prohibited	Bellevue, Fremont
Wood County	Land application acceptable	Bowling Green, Fostoria, Perrysburg

¹⁴ *Process Design Manual Land Application of Sewage Sludge and Domestic Septage*, US EPA Office of Research and Development EPA/625/K-95/001 September 1995

Recommendations

- More septage receiving capacity is needed at public wastewater treatment plants. POTWs do not have a responsibility to accept septage; therefore, better incentives are needed to encourage them to accept it. One possible source is Ohio EPA's Environmental & Financial Assistance, which offers low interest loan incentives. Privately-owned septage pre-treatment facilities may become available in the area. Please see Chapter 4, section on "Privately-Owned Septage Pretreatment Facilities" and individual FPA descriptions for policy discussion and details.

Service Provider Registration and Training

Private companies provide onsite sewage system services, for installation, operation and maintenance. In Ohio there are presently no statewide regulations and standards for licensing, bonding, and training. These policies are set by local Boards of Health, and are shown in the table below.

Onsite Sewage System Policies and Criteria			
County	Installers	Operation and maintenance Service Providers	Septage Disposal.
Lucas County	Ohio Administrative Code requires annual registration of sewage system installers with the Board of Health. Surety bond from contractor required.		Ohio Administrative Code requires annual registration of sewage tank cleaners with the Board of Health. There are no bonding or CEU requirements
Monroe County	Annual registration required. Performance bond from contractor required.		Licensed by MDNRE under Part 117 of Public Act 451 of 1994; County Health Department is required to inspect all septage vehicles before license may be issued. Vehicles are licensed for a three year period. Disposal of septage at POTW requires signature of the plant superintendent. Land application requires signed permission of property owner, and a site inspection.
Ottawa County	Ohio Administrative Code requires annual registration of sewage system installers with the Board of Health. There are no bond or ` requirements	No bonding or CEU requirements	Ohio Administrative Code requires annual registration of sewage tank cleaners with the Board of Health. There are no bonding or CEU requirements
Sandusky County	Ohio Administrative Code requires annual registration of sewage system installers with the Board of Health. There are no bond requirements; Sandusky County requires 2 CEUs/year	No bonding; requires 2 CEUs/year	Ohio Administrative Code requires annual registration of sewage tank cleaners with the Board of Health. There are no bond requirements; Sandusky County requires 2 CEUs/year
Wood County	Ohio Administrative Code requires annual registration of sewage system installers with the Board of Health. Wood County requires a \$25,000	\$25,000 bond. No CEU requirements	Ohio Administrative Code requires annual registration of sewage tank cleaners with the Board of Health. There are no

Onsite Sewage System Policies and Criteria			
County	Installers	Operation and maintenance Service Providers	Septage Disposal.
	bond. No CEU requirements		CEU requirements

Recommendations

Establish Ohio statewide standards and unified system for licensing, performance bonds, continuing education requirements for onsite system installers, operation and maintenance service providers, and septage disposal.

SFOSTSs (Small Flow Onsite Sewage Treatment Systems)

In 2007, Ohio sewage regulations established Small Flow Onsite Sewage Treatment Systems (SFOSTSs) as a category of onsite sewage treatment system. SFOSTSs are similar to HSTS in most ways. The differences are that a SFOSTS:

- Serves a non-residential structure, or more than three families
- Treats not more than 1,000 gpd of sewage
- Primary regulatory authority rests with Ohio EPA rather than the Ohio Department of Health

Semi-Public Wastewater Treatment Systems

Larger privately owned sewage treatment devices with discharges of treated effluent are “semi-public” if they treat less than 25,000 gpd. These systems, described below, are colloquially known as “package plants.” Regulation is the responsibility of Ohio EPA. More than half such systems do not have NPDES Permits. As a “semi-public” system, a board of Health may assume monitoring duties under a “House Bill 110” contract with Ohio EPA.

Ohio EPA has historically given priority to issues NPDES to larger package plants: those discharging more than 25,000 gpd. In 2008, 87% (20 of 23 active package plants over 25,000 gpd) had individual NPDES permits in the TMACOG region, while 28% (42 out of 151 active package plants) smaller than 25,000 gpd have NPDES permits.¹⁵ Package plants have become much less common in northwest Ohio over the years. Ohio EPA has permitted far fewer package plants, and DMAs have been very active in extending sewers to eliminate existing plants. In 1984, there were 355 package plants in the same five counties, 36 (10%) with NPDES permits. There were 57 package plants over 25,000 gpd, of which 26 (42%) had NPDES permits.¹⁶

Package Plants

Extended aeration is a biological treatment process that grows a culture of aerobic micro-organisms (activated sludge) to digest the organic matter in sewage. An extended aeration plant has an aeration chamber where activated sludge and raw sewage are mixed with air to promote digestion. The plant has a settling chamber as well. Clear, treated water flows over a weir and out of the plant; activated sludge settles to the bottom and is pumped back to the aeration tank.

¹⁵ From TMACOG Package Plant Inventory updated May 2008.

¹⁶ TMACOG Package Plant Inventory, December 1984. Package plant totals at that time: Erie: 58, Lucas 103, Monroe 2, Ottawa 105, Sandusky 58, and Wood 87.

Extended aeration plants as they have been designed over the last forty years come in numerous variants, depending on design requirements at the time. Common facilities include:

- Trash trap —a septic tank preceding the plant to remove settleable and floatable solids
- Chlorination — disinfects treated wastewater; usually a plastic tube that feeds slow-dissolving chlorine tablets as needed.
- Dechlorination — Removes residual chlorine from effluent after disinfection is done. Mechanically, a dechlorinator is similar to a chlorinator. These devices came into common use in the late 1990s.
- Filter — a sand bed that filters remaining solids out of treated effluent
- Some larger extended aeration plants have an aerobic sludge digestion/sludge holding tank

Ohio EPA and Michigan DNRE are responsible for permitting package plants. For a new package plant to be permitted, the application must go through the anti-degradation review process and demonstrate that there is no other sewage treatment method available. That means a septic system will not be adequate, and that public sewers are not available. Whether a proposed package plant may be built in an unsewered part of a Facility Planning Area is determined in Chapter IV of this Plan. They may be accepted or denied as a policy of each FPA. Presently all FPAs accept temporary package plants where public sewers are not available. Unless stated otherwise, package plants may be permitted where public sanitary sewers are not available and accessible..

The majority of small, privately-operated wastewater plants are extended aeration systems discharging treated effluent to a stream, ditch, or storm sewer. Some plants, especially those of older design, use other treatment processes. Examples include:

- Settling tank with surface sand filter (Imhoff treatment plant)
- Trickling filter
- Wastewater lagoon

The equipment for these systems is different than extended aeration plants, but the management issues are identical. For that reason, these systems should be considered as “package plants” for the purposes of the *Areawide Water Quality Management Plan's* policies.

Package Plant Constraints and Issues

Modern package plants are fundamentally sound sewage treatment equipment; their problems rise almost entirely out of operation, maintenance, and management issues. Because many package plants are not operated and maintained properly, it is a requirement of this 208 Plan that they be abandoned wherever public sewers are available and accessible.

Package Plant Statistics¹⁷			
	Total Package Plants	Package Plants with NPDES Permits	Package Plants in Use
Lucas County	35	7	31
Monroe County ¹⁸	5	5	5
Ottawa County	63	40	60
Sandusky County	43	17	35
Wood County	39	16	34
Totals	185	85	165

Package Plants Outside Facility Planning Areas

Package sewage treatment plants located within Facility Planning Areas are listed in the FPA descriptions of Chapter 4. Package plants not within any FPA boundary are listed below.

Package Plants Not in Any Facility Planning Area					
Package Plant	Township	Status	Install or Upgrade Date	NPDES Permit	Capacity, gpd
Package Plants in no FPA for Lucas County					
Karl's Trading Post	Providence	Inactive	1977		5,000
Pradco	Providence	Active	1966		1,000
3917 Richfield Center Rd. (Private Residence)	Richfield	Active			1,500
Spencer-Sharples School	Spencer	Inactive	1963		15,000
Package Plants in no FPA for Monroe County					
LaSalle Landing MHP	LaSalle	Active		MI0056022	10,000
Stoney Trail Apartments	Whiteford	Active	1970, 1976	MI026611	30,000
Package Plants in no FPA for Ottawa County					
Allen Park Mobile Court	Allen	Active	1958		5,000
Wayside Inn	Benton	Inactive, bldg torn down	1975		3,500
Camp Sabroske	Carroll	Active	1966	2PRT00197	4,000
Carroll Elementary School	Carroll	Active	1961		10,000
Paradise Acres Camp & Pool	Carroll	Active	2003	2PR00192	31,500
Toussaint River Marina	Carroll	Active	1985	2PR00155	6,000
Porky's Pizza Trough	Carroll	Active	1988	2PR00259	9,000
Brush-Wellman	Harris	Active		2EI00000	30,000

¹⁷ From TMACOG Package Plant Inventory updated April 2011

¹⁸ Includes only Bedford, Erie and Whiteford Townships

Green Valley Trailer Park	Harris	Active	1968	2PY00059	9,000
Rattlesnake Island Club Subdivision	Put-in-Bay	Active	1991		15,000
Package Plants in no FPA for Sandusky County					
Misty Meadows Camp	Ballville	Active	1982		6,300
O'Flaherty's, Patrick J.	Ballville	Inactive burned down 2001	1973		9,000
Westwood Subdivision	Ballville	Active	1973	2PG00023	20,000
Whirlpool Park Clubhouse	Green Creek	Inactive	1955		4,500
Adam's Acres Subdivision	Jackson	Active	1977	2PG00082	35,000
Lakota East School	Jackson	Active	1955		4,500
Rollersville Tavern	Madison	Active	1990		3,500
US 6/23 Retail Sales	Madison	Active	1973	2PR00202	5,000
Apollo Trailer Park	Rice	Active	1971	2PY00062	15,000
Fremont Plastic Mold	Rice	Active	1982	2PR00186	4,000
TRW Automotive	Rice	Closed	1970	No permit required	35,000
Bayshore Country Inn	Riley	Closed	1990		3,000
Erie Island - Commodore Perry Service Plaza	Riley	Active	Before 1961	2PQ00001	150,000
General Cutlery	Riley	Active	1973		12,500
General Cutlery	Riley	Inactive	1947		3,600
Vickery Environmental	Riley	Inactive		2IN00016	2,500
Lakota High School	Scott	Active	2009	2PT00053	15,000
M&M Tavern	Townsend	Active	1972		3,000
Townsend Elementary School	Townsend	Active	1973		7,000
Winding Lakes Trailer Park	Townsend	Active	1971, 1986		5,000
Next Level Auto	Washington	Active	1986		5,000
Roots Poultry	Washington	Active	1993		5,000
Sycamore Hills Golf Course	Washington	Active	1992	2PR00193	7,500
Carmeuse Lime Millersville	Woodville	Active	1957	2IJ00032	3,000
Matlack Trucking Co.	Woodville	Active			1,700
Package Plants in no FPA for Wood County					
Helena Chemical Co.	Center	Active	1970	2PR00245	1,500
Edgewood Inn	Freedom	Active	1964		3,000
Ports Petroleum Fuel Mart #767	Freedom	Active	1987	2PR00190	4,000
Country Side MHP	Liberty	Active	1988	2PY00071	8,000
Southside Packers	Montgomery	Inactive	1975, expansion		25,000
Perrysburg Estates MHP, SS #5	Perrysburg	Active	Expanded 1991?	2PY00014	25,000
Village Green Mobile Home Park	Perrysburg	Active		2PY00008	45,000
Elmwood High School	Portage	Active	2003	2PT00038	30,000

Portage Elementary School	Portage	Active			3,000
Eastwood High School	Troy	Active	2000	2PT00026	20,000

Policies

- Package plants shall be required to tap into public sewers when sewers become available and accessible, regardless of the age, condition, or design capacity of the package plant.¹⁹ New package plants shall be permitted only on this condition.
- Package plants should be available as a sewage treatment option for subdivisions where public sewers are not available, except where disallowed by the policy of the Facility Planning Area (see Chapter 4). In such cases, a properly operated and maintained package plant may be better environmentally than individual septic systems. Such a package plant should include two provisos:
 - The package plant is owned and operated by the County Sanitary Engineer (Ohio), Drain Commissioner (Michigan), a municipality with qualified staff, or Regional Water and Sewer District. (Ohio).
 - The plant has an NPDES permit and meets its effluent requirements.

Package Plant Management Issues

Ohio House Bill 110

Regulation of package plants is the responsibility of the designated state agencies, Ohio EPA and Michigan DNRE. In Ohio, House Bill 110 (1984) changed ORC §3709.085 to allow local Health Departments to contract with Ohio EPA to monitor systems and cover costs by charging a fee.

House Bill 110 has been applied successfully in some parts of Ohio, notably the northeast part of the state. It has not been successfully implemented in the TMACOG Region. Inspections cover “semi-public” treatment works — package plants and commercial septic systems. Package plants discharging over 25,000 gpd are not considered “semi-public” and are exempt from monitoring and inspection. The statute also prevents the Board of Health from charging a fee when a package plant serves a “manufactured home park, recreational vehicle park, recreation camp, or combined park-camp that is licensed under section 3733.03”.

In 1987-1990 the Wood County Board of Health instituted a House Bill 110 program with the following fee schedule:²⁰

Sewage Treatment System Type	Flow, gpd	Inspection Frequency	Fee
Aeration with off-lot discharge	10,000-25,000	Quarterly	\$150/year
Aeration with off-lot discharge	5,000-9,999	Quarterly	\$100/year
Aeration with off-lot discharge	1,500-4,999	Annually	\$50/year
Septic or aeration with off-lot discharge	Below 1,500	Annually	\$50/year
Septic or aerobic with no	Below 1,500	Once every three years	\$50/three years

¹⁹ Most unincorporated areas are covered by ORC §6117 which defines “available” as 200 feet from the foundation of the building to the edge of the sewer right of way. Wood County regulations use 400,’ subject to confirmation of availability by the DMA. In areas covered by Regional Water and Sewer Districts, “...require such connection so as to prevent or abate pollution or protect the health and property of persons...” In Michigan, State Law authorizes local governments to require connection to a public sewer.

²⁰ *Semipublic Sewage Regulations of Wood County General Health District*, March 1987

off-lot discharge			
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The program was discontinued after three years because it was not financially self-sustaining. Problems the Wood County Board of Health faced included:

- Several package plants were excluded from the program either because they were bigger than 25,000 gpd or because they fell under the ORC §3733.03 exclusion (see above). In some other counties the majority of package plants fall under this exclusion (Ottawa for example) because most package plants serve a recreational facility.
- While HB 110 allows Boards of Health to inspect semi-public systems, enforcement remains with the State through the Attorney General’s office. Enforcement of fee collection also remained with the State. The Board was not able to collect sufficient fees to run the program.

Health Levy Funding

Several County Boards of Health rely on a levy for operating funds. Relying on voted funds places Board of Health in a vulnerable position when they are called upon to enforce regulations or make unpopular decisions. Levies are used to support programs and general operations of Health Departments. These funds may pay for environmental health programs, but they also support other functions and services. A summary of County Health levies for general operating funds is given in the following table.

Board of Health Levies for General Operating Funds	
	Levy Funding?
Lucas County	No
Monroe County	No
Ottawa County	No
Sandusky County	Yes
Wood County	Yes

Policies

- Institute regular training programs for package plant operators on a regional level, conducted at minimum every three years. Should target operators of package plants regardless of whether they have NPDES permits. Must include not only licensed operators, but also the onsite person who maintains the plant on a day-to-day basis. Programs should be designed to fulfill OEPA Contact Hours and ODH Continuing Education requirements.
- OAC §3745-33-08 (b) and (c) forbid issuance of an NPDES permit to a semi-public facility when a public sewer is available; and require abandonment of the semi-public facility in favor of a tap to the sewer. Because the definition of “semi-public” only includes package plants under 25,000 gpd, larger package plants are exempt from the requirement. Requirements to tap into public sewers must apply to all privately owned sewage treatment systems regardless of their size.
- All package plants must have and be operated under either a general or individual NPDES permit.

Areawide Policies

This section establishes policies and recommends practices to provide onsite sewage treatment that protects water quality and public health.

1. Boards of Health shall administer local onsite sewage treatment regulations pursuant to the Ohio Administrative Code (OAC) 3701-29. The Monroe County Health Department shall administer the Monroe County Sanitary Code.
2. The TMACOG Environmental Council shall maintain the Onsite Sewage Treatment Chapter with a list of Best Management Practices and recommended policies. Each management agency shall be responsible for its own list of practices to be included in Plan updates.
3. The County Health Departments should:
 - a. Coordinate its regulations and policies with the other agencies, including land use planning, capital improvements programming, and public wastewater treatment to prevent the installation of home sewage systems in unsuitable areas.
 - b. Cooperate with the Environmental Council, its subcommittees, and the other Designated Management Agencies for home sewage treatment to update the Plan and keep it current to the needs of the region.
 - c. Not allow onsite sewage systems to discharge waste offsite except under the provisions of the applicable state regulations: Ohio Administrative Code or Michigan Act 245/Michigan Criteria for Subsurface Sewage Disposal.
 - d. Assure uniform interpretation and enforcement of state regulations as a minimum. Provide for adequate funding to administer effective monitoring program. Augment state regulations to reflect specific onsite sewage treatment problems.
 - e. Cooperate with TMACOG and other agencies to institute an educational program for septic tank installation and maintenance targeted at homeowners and developers.
 - f. Maintain sufficient and well-trained staff.
 - g. Ban the installation of new systems in identified Critical Sewage Areas
4. The TMACOG Environmental Council shall:
 - a. Work to implement the creation of onsite waste management districts responsible for planning, design, installation, operation and maintenance, and monitoring of onsite systems within sub-county or given problem areas.
 - b. Support the periodic updating of soil surveys.
 - c. Seek new improved legislation from the Ohio Legislature as detailed in the Recommended Implementation Activities section at the end of this chapter.
 - d. Support long-term research on effective and practical onsite sewage treatment systems for the soil conditions of our region. System designs must work in real-world applications for untrained residents without professional operators. System selection must take into account what will happen when the system is neglected and fails. Expand the list of Best Management Practices as appropriate to include tested and proven practical systems.
5. The Environmental Council and the management agencies shall work together to improve the programs for home sewage treatment in accordance with the recommendations of this chapter.
6. The Areawide Water Quality Management Plan supports the goals and recommendations of Ohio DNR's *Ohio Coastal Nonpoint Pollution Control Program Plan*, submitted to NOAA in September 2000. It is recommended that its onsite sewage treatment management measures in Sections 5.6.1 and 5.6.2 be incorporated into local, regional and state policy.²¹

²¹ For more information on the ODNR *Ohio Coastal Nonpoint Pollution Control Program Plan*, please see <http://www.dnr.state.oh.us/odnr/soil+water/Coastalnonpointprogram.htm>

Policy Implementation

Regulatory Programs

Existing Programs

The State of Ohio requires that all counties enforce Household Sewage Disposal System Regulations, covered in OAC 3701-29, described earlier in this chapter. The Boards of Health administer the regulations and have the power to abate nuisances. The Boards of Health may petition the Court of Common Pleas for injunctive relief against a nuisance and may also abate the nuisance, with cost charged to the owner, or a lien set against the subject property. Provisions are made for a hearing prior to enforcement action.

Monroe County Sanitary Code regulations are of similar scope and design with a few differences.

Subdivisions, Package Plants, and Onsite Systems

Centralized sewerage systems shall be given first consideration for sewage treatment in residential subdivisions. Connection to an existing treatment plant is preferred, with construction of a package treatment plant the secondary alternative. If a sewage collection system is not available and accessible, and a package treatment plant is not feasible in the judgment of Ohio EPA, the local Board of Health may allow an onsite treatment system, except as prohibited by individual FPAs. As indicated below, there are variations among the county subdivision regulations pertaining to sewage treatment requirements. According to each county's subdivision regulations, package treatment plants must be constructed by the developer of a subdivision, and then deeded to the respective county.

Some Facilities Planning Areas (Chapter 4) require new residential subdivisions to be served by that FPA's public wastewater treatment plant, not package plants or onsite systems. See the following FPAs for more information:

- Bellevue
- Clyde
- Fremont

Over the past twenty years the practice has been to eliminate package plants wherever possible and resist permitting new ones. Package plants are viewed as maintenance problems by the County Sanitary Engineers, and ineffective sewage treatment facilities by Ohio EPA and the Health Departments because they are generally neglected. New package plants have been installed for rural businesses; they are rarely permitted for suburban or rural subdivisions.

Complaint Procedure for Unsanitary Conditions

Ohio Revised Code and Administrative Code set procedures for reporting cases where untreated sewage is contaminating public waterways. ORC §6111.05 requires Ohio EPA to investigate when it receives a written complaint. ORC §6117.34 describes a more rigorous complaint procedure applicable to unincorporated areas, and is recommended for Health Departments. Such a complaint should be sent to the Ohio EPA District Office, and follow procedures set in OAC 3745-1-04(F), summarized below:

- Detailed documentation of unsanitary conditions, visual (black water or sludge, gassing or grayish white water, toilet paper), odor (sewage smell), and data (fecal coliform or *E. coli*).
- Bacterial tests conducted under the supervision of Ohio EPA or a Registered Sanitarian should include at least two sample runs. The samples must be collected at least two hours apart but within

30 days of each other. The samples are to be collected when stream flow is in a steady state dry weather condition. Bacterial standards defining a violation of water quality standards are:

- More than 5,000 fecal coliform/100 ml in two or more samples when five or fewer samples are collected; or in more than 20% of samples when more than five are collected.
- More than 576 *e. coli*/100 ml in two or more samples when five or fewer samples are collected; or in more than 20% of samples when more than five are collected.²²

A complaint filed under ORC §6117.34 must include a resolution adopted by the Township Trustees or Board of Health.

Financial Assistance

This Plan encourages the use of financial assistance programs to upgrade or replace onsite sewage treatment systems. This Plan supports funding for these programs through federal, state, regional, and local agencies.

USDA Rural Development

USDA/RD “Section 504” funds may be used for home repairs to remove health and safety hazards. One such use is to upgrade or replace home sewage systems. Section 504 funding may be available as a loan, or a grant/loan combination. Financial need is a requirement in all cases. Grants may be available to those 62 years of age or more, and unable to repay a Section 504 loan. Funding under this program is available only in rural areas. Applications are made through USDA district offices.

HUD Community Development Block Grant

The CDBG Community Housing Improvement Program (CHIP) may be used to upgrade or repair housing for low and moderate income households. Sewage system upgrades and sewer taps are among the eligible housing improvements. The initial application is made by a local jurisdiction, which then administers grants to residents. Counties are the applicant for unincorporated areas; “non-entitlement” cities and villages under the Block Grant regulations may also apply. Households must qualify as “low to moderate income” under HUD rules.

Ohio EPA Water Pollution Control Loan Fund

Individual residents may qualify for reduced interest loans through the Ohio EPA Linked Deposit Program. Depending on the credit market, the program may lower the resident’s interest rate by as much as 5%. The resident uses the loan to upgrade his/her sewage system. The property owner works with the Health District and a participating bank; if the property owner qualifies, the board of health issues a Certificate of Eligibility.

The participating bank evaluates the Certificate of Eligibility; if the applicant is credit worthy, the bank issues the loan. The bank sends an investment request form to Ohio EPA. Upon approval, Ohio EPA and OWDA deposit with the bank through a certificate of deposit, funds equal to the face value of the loan. The period of the CD is the same as the loan to the property owner, but not to exceed 20 years. The interest rate of the loan to the property owner is reduced by the same amount as the discount the bank received from Ohio EPA. Loans for sewage systems that discharge effluent off-lot are not eligible.

Clean Michigan Initiative: Failing Onsite Septic System Grants

Michigan DNRE administers this grant program to identify failing onsite septic systems and/or implement corrective measures. This funding may replace failed septic systems with sewer extensions

²² OAC §3745-1-04

or treatment facilities. It does not pay for repairing or replacing failed septic systems. Funding is limited to the amount appropriated to it for any given year. The funding source is the Clean Michigan bond fund.

EPA “§319” Nonpoint Source Grants

US EPA, through Ohio EPA provides grant funds under §319 of the Clean Water Act to reduce nonpoint sources of water pollution. This is the same program described in the Agricultural Runoff Chapter of this Plan. For home sewage treatment systems, fundable activities may include:

- Educational programs
- Cost share for upgrading or replacing home systems; systems discharging effluent off lot are not eligible
- Development, testing, and demonstration of alternative home sewage systems.

Recommended Implementation Activities

1. Better coordination of planning, design and installation of onsite sewage treatment systems among governmental agencies.
2. More consideration and use of technical alternatives to traditional onsite sewage treatment systems where physical conditions warrant.
3. More specific enabling legislation at the state level to allow improved enforcement of proper maintenance
4. Better administration at the local health department level of onsite sewage treatment systems.
5. Improved education and information for homeowners on the proper operation and maintenance of onsite sewage systems.

Coordination of Planning, Design and Installation

- Health regulations for onsite sewage treatment system should be coordinated with existing county land use policies and controls, including zoning and subdivision regulations. Lot splits should be coordinated with health and home sewage regulations, soils information, drainage and capital improvement plans.
- As part of the lot split review procedure, a recommendation on suitability of the site for sewage disposal from the county health department should be required.

Onsite System Design Alternatives

Septic tank-soil absorption systems are just one type of onsite sewage treatment. Other onsite sewage treatment systems may be used on a site with restrictions due to soil conditions. This plan's recommendation is to use passive sewage systems preferentially over mechanical treatment systems where site conditions allow. Passive systems, where soil absorption provides the final effluent treatment and disposal, are less dependent upon mechanical equipment which may fail due to neglect or lack of understanding on the part of the owner. Dependency on mechanical sewage treatment equipment that requires a skilled operator is the fundamental problem with package plants, and should not be unnecessarily repeated in onsite system designs.

While mechanical systems are not the preferred alternative, they are allowable under state law, and subject to proper operation and maintenance of the mechanical equipment. The table below lists onsite system alternatives. These alternatives are recommended as Best Management Practices.

Recommended On-site System Best Management Practices	
Flow Reduction Techniques	
	Standard plumbing fixtures
	Water conservation shower heads
	Water conservation toilets
	Septic tanks with conventional soil absorption system where allowable under soil conditions (e.g., sandy soils) [alternating leaching fields required for new systems]
	Septic tank with low or “at grade” mound leaching system where site conditions allow but conventional septic/leaching system is not suitable (e.g., clay soils)
	Other technologies will be considered where the above system designs are not adequate, or where pre-treatment is required.

- Evaluate onsite sewage disposal alternatives based on long-term testing in northwest Ohio/southeast Michigan soil conditions.

State-Enabling Legislation

- Basic System Assessments should be mandatory for all onsite systems, regardless of whether they are new or existing, regardless of whether they are legally classified as “semi-public.” A basic system assessment is the regular inspection of permitted and installed home sewage treatment systems.
- Basic System Assessments should be paid for by residents through inspection or permit fees. The State of Ohio should provide financial assistance to local health districts for the development and implementation of inspection and maintenance programs. State assistance is especially important for counties whose environmental health programs are supported by voted tax levies.
- Inspection and maintenance of onsite systems should be required annually for mechanical systems, and once every five years for non-mechanical systems. These requirements should be phased in over a three to five year period to allow local Health Districts to develop and implement their programs. State funding should be provided in the development period.
- Clarification is needed between the roles and responsibilities of Ohio OEPA and the Ohio Department of Health in responsibility for onsite systems. These two agencies split their enforcement authority with package plant systems depending upon the size of the plant. The capability of one of these state agencies needs to be expanded to ensure that local boards of health effectively manage all facets of their onsite sewage treatment program.
- This Plan supports enabling legislation for onsite sewage system management districts, allowing Boards of Health to contract with any entity for installation, operation and maintenance, monitoring and problem correction of onsite sewage treatment systems. Legislation should allow a Board of Health to enter into a management contract without relinquishing or delegating its responsibility for assuring compliance.

Administration of Onsite Sewage Regulations

- All programs for improving onsite sewage treatment must be adequately financed. Investigate implementation of a fee schedule and charges to make the regulatory system for administering home sewage and package plant programs self-financing.
- Establish stream and septic system monitoring programs to identify failed systems. Areas designated as Critical Sewage Areas should have priority for:
 - Stream monitoring and sanitary surveys

- Financial assistance to homeowners for upgrading systems using State Water Pollution Control Revolving Loan Fund programs or other grant/loan programs
- Cost share funds through the US EPA §319 non-point source program

Public Information and Education

- Develop and conduct information and education programs and materials with boards of health through the TMACOG Environmental Council, its subcommittees, watershed stewardship organizations, and the Northwest Ohio Sewage Consortium. Educational programs should be geared to take advantage of available funding through grant programs, such as the Ohio Environmental Education Fund, the Lake Erie Protection Fund, and the Coastal Zone Management Assistance program.
- Adopt policies requiring site inspections prior to sale or development of a parcel of property.

Critical Sewage Areas (CSAs)

County/Local Boards of Health identify CSAs. They are areas with concentrations of failed or failing onsite sewage systems, based on sampling results, complaints received by the Health Department; or areas with suspected failures based on Health Department observations and best professional judgment. System failures result in known or suspected cases of:

- Surface water contamination, and/or
- Ground water contamination, and/or
- Public health nuisances.

County/Local Health Departments identify CSAs as places where onsite sewage problems cannot be solved by conventional system upgrade or replacement. Existing system upgrades/replacements often will not solve the problem or are not an optimal solution because:

- There is a significant concentration of onsite systems that are known or suspected to have failed.
- Most of the systems are on small lots that do not have room for replacement leaching fields.
- Soil conditions for leaching fields are poor due to shallow bedrock, tight silt/clay soils, and/or seasonally high groundwater.

CSAs are:

- Priority areas for Ohio EPA, Michigan DNRE, and Health Departments to conduct sanitary surveys.
- Priority areas for inspection and increased maintenance of onsite systems until such time as a central public sanitary sewerage system is in place.
- Priority areas for public sanitary sewers or innovative community onsite sewage treatment systems to replace concentrations of individual systems. For CSAs where a public sanitary sewerage system is the best alternative, the priority order for construction may be affected by the availability of financial assistance.
- Priority areas for financial assistance to homeowners for installing public sanitary sewers.

CSAs are listed below by county without prioritization. The code numbers after each CSA correspond to the regional map labels.

Critical Sewage Areas (CSAs)

Critical Sewage Areas**Lucas County**

NAME	NUMBER
Neapolis	LU-02
Monclova	LU-04
Pt Place/Washington Twp	LU-05
Swan Cr Headwaters: Airport-Swanton	LU-06
Alexis/Whiteford	LU-07
Springbrook/Davis	LU-09
SR 64 NW of Whitehouse	LU-10
Berridge Road	LU-11
Bittersweet Farms/Camp Courageous	LU-12
Rancamp	LU-13
State Line + Detroit-Alexis-CSX Triangle	LU-15
Longworth	LU-16
East Hancock	LU-17
West Hancock	LU-18
River Road	LU-20
Bailey Road	LU-21
Reno Beach	LU-22
North Toledo	LU-23
Dearden/Birdsall	LU-24
Curtice	LU-25
Decant	LU-26
Donovan - Wallace - Yoder - Standart	LU-27
Coolie	LU-28
Erie View	LU-29
Pavilion - Beach View - Temple	LU-30
Northway	LU-31
North - Allegan - Van Dyke	LU-32
Rachel	LU-33

Critical Sewage Areas**Monroe County**

NAME	NUMBER
Erie	MO-01
Lost Peninsula	MO-02
McLeary's Point	MO-03
Morin Point	MO-04
State Road	MO-05
South Dixie	MO-06
Ottawa Lake	MO-07

Critical Sewage Areas	
Ottawa County	
NAME	NUMBER
Curtice	OT-01
Williston	OT-02
SR 19 S of Oak Harbor	OT-03
Waterford Place	OT-04
SR 19 N of Oak Harbor to Salem-Carroll Road	OT-05
Behlman	OT-06
Clay Twp Near Genoa	OT-07
Clay Twp Near Genoa	OT-08
South Bass Island	OT-09
South Bass Island	OT-10
Locust Point	OT-11
Johnson's Island	OT-12
SR 269 in Danbury Twp	OT-13
Englebeck Road	OT-15
Rocky Ridge	OT-16
Erie Twp: SR 163 and Richey Road	OT-17
Portage Twp south shore, sections 7, 8, and 9	OT-18
Middle Bass Island	OT-19
Port Clinton Eastern Road	OT-21
Lacarne	OT-22
East Harbor Road	OT-24
Toussaint River Association	OT-25

Critical Sewage Areas	
Sandusky County	
NAME	NUMBER
Toussaint Creek	SA-01
Portage below S. Br	SA-02
Portage below N. Br	SA-03
Sugar Creek	SA-04
Woodland Hts	SA-06
Muncie Hollow	SA-08
White's Landing	SA-09
Wightman's Grove	SA-10
Rambo Rd	SA-11
Hessville	SA-12
Vickery	SA-13

Critical Sewage Areas	
Sandusky County	
Hayes/53	SA-15
Timpe / Twp Line / Cole	SA-16
Green Cr Limerick Rd	SA-17
Country Club Estates	SA-18
Barkshire Hills	SA-19
Wooded Acres Campgrounds	SA-20
West State Street	SA-21
Christina Drive	SA-22
Four Mile House Road	SA-23
Rodriguez Street	SA-24
Millersville	SA-25

Critical Sewage Areas	
Wood County	
NAME	NUMBER
Bays/ Bradner Road	WO-01
West Millgrove	WO-02
SR 64 N of King	WO-03
King Road / RR	WO-04
Stony Ridge	WO-08
Bairdstown	WO-10
Otsego along river	WO-11
Dowling	WO-12
Dunbridge	WO-13
Sugar Ridge	WO-14
Kramer/Huffman	WO-15
Hammansburg	WO-16
Curtice/Bradner	WO-17
Five Point	WO-18
Hatton	WO-19
Johnson's Subdivision	WO-20
Mermill	WO-21
Maurer's MHP	WO-22
J&T MHP	WO-23
South Rudolph	WO-24

Critical Sewage Areas

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A Critical Sewage Area are areas with concentrations of failed onsite sewage systems, based on sampling results, complaints, suspected failures based on Health Department observations and best professional judgment.

They are recommended priority areas for system inspection and maintenance, replacement or repair, and/or installation of sewers. The 208 Plan supports funding for these actions.

