

**MEDINA COUNTY SANITARY CODE
CHAPTER 29
MEDINA COUNTY COMBINED
GENERAL HEALTH DISTRICT**

***SEWAGE TREATMENT SYSTEM
RULES***



4800 Ledgewood Drive, Medina OH 44256

330-723-9688 1-888-723-9688

www.medinahealth.org

**Medina County Combined General Health District
Adopted July 16, 2007
Effective Date July 17, 2007**

**Medina County Combined General Health District
Sewage Treatment System Rules
Chapter 29**

TABLE OF CONTENTS

<u>Rule Number</u>	<u>Rule Title</u>	<u>Page</u>
29-01	Definitions.	4
29-02	Purpose and scope.	10
29-03	Authority, applicability, and related provisions.	11
29-04	Responsibility for compliance, demonstration competency, and registration requirements.	12
29-04.1	Installers.	15
29-04.2	Septage haulers.	16
29-04.3	Service providers.	17
29-05	Vacant	18
29-06	Fees, fee categories, fee transmittal and reporting.	19
29-06.1	Cost methodology.	20
29-07	General provisions and prohibitions.	21
29-08	Site and soil evaluation.	24
29-08.1	Subdivisions and new lots.	26
29-09	Permits for installation, alteration, and operation.	28
29-09.1	Layout plans, design plans and as-built records.	31
29-10	Sewage source, building sewer, and related fixtures	35
29-11	Tanks, pumps, and controls.	38
29-12	Effluent quality standards and pretreatment provisions.	42

29-13	Soil absorption provisions.	44
	Appendix to Rule 29-13	49
29-13.1	Leaching trench requirements.	50
	Appendix to Rule 29-13.1	53
29-13.2	Mound with pressure distribution requirements.	57
	Appendix to Rule 29-13.2	62
29-13.3	Drip distribution requirements.	68
29-14	Site modification.	72
29-15	Privies and holding tanks.	74
29-16	Education, inspection, compliance, and enforcement.	75
29-16.1	O&M management.	77
29-16.2	Residuals management.	79
29-17	HSTS abandonment.	82
29-18	Variances and related provisions.	83

29-01 **Definitions.**

As used in this chapter:

- (A) "AASHTO" mean the American association of state highway and transportation officials.
- (B) "Alter" means to change by making substantive replacements of, additions to, or deletions in the design or materials or to change the location of an existing sewage treatment system. For the purposes of this chapter, the terms "alter" or "alteration" shall not include the replacement of the primary treatment unit for the sewage system, the complete replacement of an existing sewage treatment system or the repair of a sewage treatment system by making minor corrections to existing components.
- (C) "ANSI" means the American national standards institute.
- (D) "ARCPACS" means the federation of certifying boards in agriculture, biology, earth and environmental sciences.
- (E) "ASTM" means the American society for testing and materials or ASTM international.
- (F) "Bedrock, rock and other fragments" means bedrock underlying the soil or exposed at the surface of the ground and rock and other fragments that are discrete particles greater than two millimeters including, but not limited to, gravel, cobbles, flagstones, stones and boulders. For the purposes of this chapter, a limiting condition shall include soils having bedrock, rock or other fragments greater than fifty per cent by volume.
- (G) "Bedroom" means any room within a dwelling that might reasonably be used as a sleeping room including but not limited to rooms designated as a den, office, or study.
- (H) "Board of health" means the board of health of the Medina County Combined General Health District or its authorized representative.
- (I) "CSA or CAN/CSA" means the Canadian standards association or CSA international.
- (J) "Department of health" means the department of health of the state of Ohio.
- (K) "Director of health" means the director of the department of health of the state of Ohio and includes any authorized representative of the director.
- (L) "Domestic septage" means the liquid or solid material removed from a sewage treatment system, septic tank, portable toilet, or type III marine sanitation device as defined in 33 C.F.R. 159.3. (as published in the July 1, 2005 Code of Federal Regulations) "Domestic septage" does not include grease removed from a grease trap.

- (M) "Drainage system" means a drain or drains designed to effectively lower seasonally ponded or shallow subsurface water to establish or increase an unsaturated vertical separation distance uniformly beneath a soil absorption component.
- (N) "ETV water quality protection center" means the program established by the United States environmental protection agency and the national sanitation foundation to verify commercial-ready technologies that protect ground and surface waters from contamination. Under the program, technologies are evaluated by a third party organization following technically sound test procedures with appropriate quality assurance and quality control to provide purchasers, specifiers, and permittees with credible and relevant data.
- (O) "Gradient drain" means a drain designed to create a hydraulic gradient to facilitate the flow of subsurface water away from the area of a soil absorption component to allow effluent from a sewage treatment system to infiltrate the soil.
- (P) "Graywater" means sewage that does not include flows from toilets and urinals, and in some cases also does not include flows from kitchen sinks carrying food wastes.
- (Q) "Ground water" means all water occurring in an aquifer. For the purposes of this chapter, ground water includes an apparent water table.
- (R) "Hardscape" means any constructed surface area on the landscape of a site such as a driveway, parking area, patio, building slab, or other similar surface area.
- (S) "Household sewage treatment system (HSTS)" means any sewage treatment system, or part of such a system, that receives sewage from a single-family, two-family, or three-family dwelling and residential dwellings or appurtenances including but not limited to:
- (1) A bed and breakfast, residential facility, or other residence as described in divisions (B)(2), (B)(4), and (B)(13) of section 3717.42 of the Revised Code.
 - (2) An ancillary restroom associated with a dwelling in a location such as a barn or personal garage that is not used as an additional dwelling, sleeping area, or business and the users of the ancillary restroom are the same users as the dwelling. An ancillary restroom shall not be available for public use.
 - (3) Vacation rental cabins provided there is a separate HSTS for each cabin.
 - (4) A dwelling with a home business having no access for the general public and does not generate additional sewage as part of its operation.
- (T) "IAPMO" means the international association of plumbing and mechanical officials.
- (U) "Infiltrative surface" means the contact area where sewage is applied to the soil or sand fill for the purpose of treatment and/or dispersal.

- (V) "In situ soil" means soil that has been naturally deposited or formed in its present location with adequate texture, structure and consistence necessary for treatment and/or dispersal, or in the case of reclaimed or filled areas, has had sufficient time to form the texture, structure and consistence necessary for treatment and/or dispersal.
- (W) "Inspection" means the on-site evaluation or analysis of the functioning of a sewage treatment system.
- (X) "Installer" means any person who engages in the business of installing or altering or who, as an employee of another, installs or alters any sewage treatment system.
- (Y) "Interceptor drain" means a drain designed to intercept the horizontal flow of subsurface water to reduce its impact on a down gradient soil absorption component.
- (Z) "Limiting condition" means a restrictive soil layer, bedrock, ground water, a perched seasonal high water table or other condition or combination of conditions that severely limit the treatment and/or dispersal of sewage or effluent.
- (AA)"Linear loading rate (LLR)" means the volume of effluent applied daily along the landscape contour expressed in gallons per day per linear foot. The LLR may also be referred to as the hydraulic linear loading rate. The LLR is used to determine the required length of the distribution system parallel to surface contours.
- (BB)"Lot" means a legally recorded parcel of land.
- (CC)"Manufacturer" means any person that manufactures a sewage treatment system or components of a sewage treatment system.
- (DD)"Monitoring" means the activity of verifying performance requirements and may include, but is not limited to, sampling of effluent from a sewage treatment system component. For the purpose of this chapter, monitoring activities shall be conducted by either the board of health or a registered service provider.
- (EE)"NPDES" means national pollutant discharge elimination system.
- (FF)"NRCS" means the natural resources conservation service.
- (GG)"NSF" means the national sanitation foundation or NSF international.
- (HH)"ODNR" means the Ohio department of natural resources.
- (II)"OEPA" means the Ohio environmental protection agency.
- (JJ)"O&M" means operation and maintenance.

- (KK)"Order one soil survey" means a soil inventory produced for very intensive land use that requires detailed information about soils. Standards are described in section 655.04 of the national soil survey handbook. Order two soil survey information is available in county soil surveys.
- (LL)"Perched seasonal high water table" means the shallowest depth of soil which is saturated with water above an unsaturated zone for at least three weeks or longer periods of time, often with repeated occurrences during the winter and/or spring seasons of the year.
- (MM)"Perennial stream" means natural waters of the state with a defined stream bed and bank and constant source of flowing water.
- (NN)"Person" has the same meaning as in section 1.59 of the Revised Code and also includes any state, any political subdivision of a state, and any department, division, board, commission, agency, or instrumentality of a state or political subdivision.
- (OO)"Pressure distribution" means dispersal of effluent in a manner that assures no more than a ten per cent difference in flow rate between the proximal and distal orifices on each distribution lateral and within the total distribution network.
- (PP)"Public health nuisance" means that as defined in Section 120.02 of HB 119 of the 127th Ohio General Assembly.
- (QQ)"Replacement" means the installation of a completely new sewage treatment system to replace an existing system or the installation of new primary treatment components.
- (RR)"Restrictive soil layer" means a compacted or dense soil layer such as a fragipan, a soil layer with a brittle and firm or very firm consistence, a soil layer having a massive structure or having a platy structure inherited from bedrock or other soil layer similarly restricting vertical flow.
- (SS)"Sanitary sewerage system" and "sanitary sewers" means pipelines or conduits, pumping stations, force mains, and all other constructions, devices, appurtenances, and facilities that convey sewage to a central sewage treatment plant and that are required to obtain a permit under Chapter 6111. of the Revised Code.
- (TT)"Septage hauler" means any person who engages in the collection, transportation, disposal, and land application of domestic septage.
- (UU)"Service provider" means any person who services, but does not install or alter, a sewage treatment system.
- (VV)"Sewage" means liquid waste containing animal or vegetable matter in suspension or solution that originates from humans and human activities. "Sewage" includes liquids containing household chemicals in solution commonly discharged from a residence or from commercial, institutional, or other similar facilities.

(WW)"Sewage treatment system (HSTS)" means an HSTS, a small flow on-site sewage treatment system, or both, as applicable.

(XX)"Small flow on-site sewage treatment system (SFOSTS)" means a system, other than an HSTS, that treats not more than one thousand gallons of sewage per day and that does not require a national pollutant discharge elimination system permit issued under section 6111.03 of the Revised Code or an injection well drilling or operating permit issued under section 6111.043 of the Revised Code. A structure or structures served by a SFOSTS shall include but is not limited to:

- (1) Vacation rental cabins with multiple cabins served by an SFOSTS.
- (2) A dwelling and an ancillary building both served by an SFOSTS where the ancillary building may be open to the public and is used by more than the residents of the dwelling.
- (3) Two dwellings, including arrangements such as a dwelling and a detached garage with living space.
- (4) A dwelling with a home business that may be open to the public, generates sewage in excess of the daily design flow or waste strength for an HSTS, and has no wastewater going to the SFOSTS other than sewage as defined in this rule.

(YY)"Soil depth credit" means the use of the design mechanisms of elevation, pretreatment, and/or distribution as substitutes for in situ soil treatment to compensate for inadequate vertical separation distance between the infiltrative surface and the limiting condition.

(ZZ)"Soil loading rate" means the daily volume of effluent applied per unit area of in situ soil expressed in gallons per day per square foot. The "soil loading rate" may also be referred to as the basal loading rate or the infiltration loading rate. The "soil loading rate" determines the size of the soil absorption area. The "soil loading rate" and the LLR determine the dimensions of the soil absorption area.

(AAA)"Subdivision" means that which is defined by section 711.001 of the Revised Code.

(BBB)"Timed dosing" means a mechanism that attenuates flows resulting from high water use periods and allows for controlled dosing intervals through use of a timing device.

(CCC)"UIC" means underground injection control and relates to the OEPA underground injection control program authorized by sections 6111.043 and 6111.44 of the Revised Code.

(DDD)"UL" means underwriters laboratories incorporated.

(EEE)"USDA" means the United States department of agriculture.

(FFF)"USEPA" means the United States environmental protection agency.

(GGG)"Vertical separation distance" means the depth from the infiltrative surface of the distribution system of the soil absorption component to a limiting condition.

(HHH)"Waters of the state" means that which is defined in division (H) of section 6111.01 of the Revised Code as all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and other bodies or accumulations of water, surface and underground, natural or artificial, regardless of the depth of the strata in which underground water is located, that are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters that do not combine or effect a junction with natural surface or underground waters.

29-02 **Purpose and scope.**

- (A) The purpose of the HSTS rules is to establish HSTS rules of general application including standards for siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an HSTS to protect public health and the environment. The HSTS rules apply to HSTS in accordance with paragraphs (B) and (C) of rule 29-03 of this Chapter.
- (B) The scope of the rules includes the performance of HSTS components, persons, agencies, and organizations as these relate to the effective management of HSTS including the siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an HSTS.
 - (1) HSTS components include those specified directly in rule, designated by a review process specified in rule, or addressed through the technical advisory committee review in compliance with sections 3718.03 and 3718.04 of the Revised Code.
 - (2) Persons include owners, operators, site evaluators, soil evaluators, manufacturers, suppliers, designers, installers, septage haulers, service providers, inspectors, and regulators.
 - (3) Agencies include the department of health, and OEPA.
 - (4) Organizations include professional associations, educational providers, responsible management entities, and other organizations engaged in activities addressed in the rules.

29-03 **Authority, applicability, and related provisions.**

- (A) Unless otherwise specified, the rules apply to HSTS.
- (B) This Chapter shall apply to all HSTS permitted to be installed or altered pursuant to this chapter after the effective date of this chapter. In cases where the board of health has provided written approval for a household sewage disposal system prior to January 1, 2007, the board of health shall permit the installation of the household sewage disposal system under the following conditions:
 - (1) There is written documentation of the household sewage disposal system approval by the board of health and the written approval has not expired.
 - (2) The household sewage disposal system shall not conflict with provisions of the NPDES program established in section 6111.03 of the Revised Code or rules adopted or permits issued pursuant to section 6111.03 of the Revised Code.
 - (3) The owner obtaining an installation permit requests to install the previously approved household sewage disposal system.
 - (4) The installation permit for the household sewage disposal system is issued by the board of health prior to July 1, 2009.
 - (5) Other than the siting and household sewage disposal system specifications previously approved by the board of health, the provisions of this chapter shall apply.
- (C) All HSTS installed or altered, or permitted to be installed or altered, prior to the effective date of these rules shall comply with the rules in effect at the time of installation, alteration, or permit issuance, unless otherwise required by this chapter. An HSTS that has been installed or altered prior to the effective date of these rules and that is operating or has the capacity to be operable on the effective date of these rules is deemed approved for the purposes of this chapter unless declared to be a public health nuisance by the board of health.
- (D) Unless otherwise specified in this chapter, the persons responsible for compliance with the rules, including but not limited to the siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an HSTS, shall be the property owner and any person performing a related service or activity. Enforcement action may be taken against the property owner and/or any person who performs a related service or activity.
- (E) The board of health is responsible for implementation of this chapter. Implementation shall be accomplished through the coordination of regulatory responsibilities with other appropriate parties, adequate communication and notification to regulated persons, and legal and equitable enforcement.

29-04 **Responsibility for compliance, demonstration of competency, and registration requirements.**

This rule identifies the responsibilities of persons engaging in activities related to the siting, design, installation, alteration, operation, monitoring maintenance, and abandonment of HSTS. Emphasis is placed on the owner as the primary responsible party in managing the tasks associated with private sector parties acting as agents on behalf of an owner. Regardless of whether the owner, an agent of the owner, or the regulatory authority conducts an identified task or activity, all parties are expected to demonstrate competency in meeting performance requirements. Other rules expand on the tasks and measures of competency associated with these responsibilities. General registration requirements for installers, septage haulers, and service providers are provided in this rule with specific requirements and competency criteria identified in three supplemental rules.

- (A) The property owner is responsible for the proper siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an HSTS. The owner shall comply with all applicable provisions of the law and rules and shall operate the HSTS in compliance with O&M instructions and any conditions of an operation permit issued by the board of health.
- (B) A site and soil evaluator shall comply with the requirements of rule 29-08 and rule 29-08.1 of this Chapter. A site and soil evaluator shall be capable of properly conducting site and soil investigations and accurately recording required information. Demonstration of competency may include, but is not limited to, certification as a professional soil scientist by the association of Ohio pedologists or ARCPACS, a professional engineer with a soils background, or an individual demonstrating competency by proof of completion of a soils identification class through a recognized learning facility such as a university or the Ohio Department of Natural Resources.
- (C) A designer shall comply with the requirements of this chapter and all other applicable laws and rules when submitting design plans for an HSTS, including details on system components, construction, and O&M sufficient for regulatory review and determination of compliance. Design plans Demonstration of competency may include licensure as a Professional Engineer or Professional Surveyor or a sewage system installer and as such he/she must be able to perform the following to demonstrate competency. Design plans shall be completed in accordance with rule 29-09.1 of this Chapter. Designers shall be able to perform the following to demonstrate competency:
 - (1) Estimate and report any expected variations in HSTS daily design flows.
 - (2) Select appropriate system components capable of meeting performance requirements based on site and soil evaluation information.
 - (3) Prepare scaled design plan, profile, and detail drawings depicting HSTS layout, dimensions, and materials and equipment specifications including construction, and O&M information.
 - (4) Conduct installation oversight as necessary to assure provision of an adequate installer as-built record documenting installation in accordance with approved design plans.

- (D) An installer, septage hauler, or service provider shall comply with the general conditions for registration required in this paragraph and the specific provisions and competency requirements respectively applicable in rule 29-04.1, rule 29-04.2, and rule 29-04.3 of this Chapter.
- (1) An application for registration shall be submitted to the board of health and shall include all information required by the board of health, the registration fee, verification of compliance with the testing provisions of paragraph (D)(2) of this rule and the competency requirements of this chapter, and proof of a Medina County surety bond as required under paragraph (D)(3) of this rule.
 - (a) A registrant that is a partnership, corporation, or other business association, shall designate one partner, officer, or other responsible full-time employee who shall be the company's representative registrant.
 - (b) Registration is not required of any person who performs labor or services under the direct supervision of a registrant. For the purposes of this rule "direct supervision" means that a registrant instructs and controls the person claimed to be supervised and that the registrant is responsible for the actions of that person and is reasonably available if and when needed, even though such registrant may not be physically present at the site.
 - (2) An installer, septage hauler, or service provider shall comply with testing requirements established by the board of health. If a registration is revoked or suspended in accordance with paragraph (D)(6) of this rule, the registrant designated under paragraph (D)(1)(a) of this rule shall be required to again comply with testing requirements before a registration is reinstated or a new registration is issued by the board of health.
 - (3) An installer shall obtain a surety bond which provides coverage for all work performed on an HSTS in Medina County, on an original bond agreement form provided by the board of health.
 - (a) The surety bond required for registration shall establish a contractual relationship between the principal, and the surety, and shall be executed by the applicant as principal and a surety company authorized to do business in the state as surety.
 - (b) The surety bond shall be for the benefit of any aggrieved party for damages incurred as a result of a violation of this chapter. For purposes of this rule aggrieved party means the local board of health where work was performed, property owner or the agent of the property owner who contracts with an installer and whose HSTS is not installed, altered or abandoned in compliance with the provisions of this chapter.

- (c) The surety bond shall be issued to provide insurance coverage for the calendar year of the registration application for any work performed. in Medina County. The surety bond shall provide that the aggregate liability of the surety for any and all breaches of the conditions of the bond shall in no event exceed the penal sum of the bond for each calendar year for which the bond is issued.
 - (d) If the surety bond for the registration is canceled, the registrant shall immediately submit to the board of health proof of a new surety bond in accordance with the requirements of this rule. The surety company shall give thirty days written notice to the board of health prior to the effective date of cancellation.
 - (e) An installer shall maintain a surety bond of not less than twenty-five thousand dollars.
 - (f) Any person who alleges to be an aggrieved party shall give written notification to the surety, the board of health and the installer within one year of the date of completion of the work on the HSTS. The board of health may conduct an investigation as necessary to determine if a violation of this chapter has occurred.
- (4) A registration shall not be transferable and shall expire annually on the thirty-first of December.
 - (5) A registrant shall maintain and submit to the board of health such complete and accurate records and information that may be required for determining compliance with the rules.
 - (6) A registrant shall submit and be subject to the compliance and enforcement provisions established in rule 29-16 of this Chapter. When the board of health finds that a registrant is or has engaged in practices in violation of this chapter, the board of health shall provide the registrant with written notification of the alleged violation, indicate if the registration may be revoked or suspended, and afford an opportunity for a hearing if the registrant does not agree to voluntary compliance. The board of health may revoke or suspend a registration when a registrant fails to timely correct violations in compliance with this chapter.

29-04.1 **Installers.**

(A) In addition to compliance with the general registration requirements in paragraph (D) of rule 29-04 of this Chapter, and as a specific condition of registration, an installer shall demonstrate competency through one of the following mechanisms:

- (1) Achieve status as an installation qualified (IQ) contractor through the Ohio onsite wastewater association (OOWA), or
- (2) Achieve status as a certified installer of onsite wastewater treatment systems (CIOWTS) through the national environmental health association (NEHA), or
- (3) Demonstrate competency through practical field experience in the installation of mound systems, leach tile fields, drip disposal systems, etc.

Registrants shall provide evidence of compliance with this paragraph at the time of initial registration only.

This condition of installer registration shall be from January 1st to December 31st of the calendar year. Registrants shall provide proof of compliance with this paragraph at the time of initial registration. To comply with the practical field experience requirement, an Installer may use copies of completed Sewage System Permits from the preceding year.

- (B) A registered installer shall provide proof of compliance with any training, qualification, or certification conditions required for a component or system and shall comply with any installation instructions in accordance with an installation permit issued by the board of health.
- (C) As a condition of an installation permit, a registered installer shall warrant that the HSTS has been installed in accordance with all applicable rules and design specifications. A registered installer shall prepare an as-built record for each completed installation in accordance with paragraph (C) of rule 29-09.1 of this Chapter.
- (D) In lieu of a design plan, a registered installer may submit a layout plan for the installation of a replacement HSTS for an existing house in accordance with paragraph (A) of rule 29-09.1 of this Chapter and in compliance with rule 29-13.1 or rule 29-13.2 of this Chapter.

29-04.2 **Septage haulers.**

(A) In addition to compliance with the general registration requirements in paragraph (D) of rule 29-04 of this Chapter, a septage hauler shall demonstrate competency through compliance with the following specific conditions of registration:

(1) Certification requirements:

(a) Achieve certification as a vacuum truck technician through the national association of wastewater transporters (NAWT) or the Ohio waste hauler association (OWHA).

Registrants shall provide evidence of compliance with this paragraph at the time of initial registration only.

(2) Obtain a permit from the board of health for each vehicle used to haul septage, report tank capacity for each vehicle, allow each vehicle and its equipment to be inspected if required by the board of health, and maintain vehicles in compliance with paragraph (B) of this rule.

(3) Manage the pumping, hauling, disposal and land application of septage in compliance with all applicable rules and regulations, and provide information to the board of health on the locations and methods of septage disposal and, as applicable, land application in accordance with paragraph (B) of rule 29-16.2 of this Chapter.

(4) Provide to the owner a report of the services conducted including the date of service and comply with any additional reporting requirements established by the board of health or required in this rule or rule 29-16.2 of this Chapter.

(B) Any vehicle and equipment used for septage hauling shall comply with the following:

(1) The company name and phone number is legibly written on the vehicle in words and numbers no less than four inches in height.

(2) All septage hauling equipment is maintained in proper operating condition and managed in a manner that prevents leakage or spills while in operation, transit, or storage.

(C) All septage haulers shall show proof of general liability insurance and pollution endorsement coverage at the time of yearly registration.

Violation of these provisions as determined by the board of health may be cause for immediate suspension of a vehicle permit.

29-04.3 **Service providers.**

(A) In addition to compliance with the general registration requirements in paragraph (D) of rule 29-04 of this Chapter, and as a specific condition of registration, a service provider shall demonstrate competency through one of the following mechanisms:

- (1) Achieve status as an Ohio waste hauler association (OWHA) qualified service provider, or
- (2) Achieve certification in the national association of wastewater transporters (NAWT) O&M or inspector programs.

Registrants shall provide evidence of compliance with this paragraph at the time of initial registration only.

(B) A registered service provider shall comply with O&M requirements in accordance with an installation permit or operation permit issued by the board of health. In addition to any such conditions or requirements, a service provider shall:

- (1) Provide manufacturer and/or general O&M information to the owner of the HSTS as applicable, and to the board of health if required, either in writing or through reference to available resources.
- (2) Understand the treatment processes, all O&M requirements, and servicing schedule for any HSTS for which the service provider offers and conducts O&M services.
- (3) Conduct routine O&M services on schedule and according to requirements.
- (4) Provide to the owner a report of the services conducted including the date of service and notation of any evidence of clear water infiltration, HSTS component deterioration, or other problem conditions.

(C) A registered service provider shall comply with any reporting or records retention requirements established by the board of health as authorized by this chapter.

(D) Service providers shall show proof of general liability insurance at the time of yearly registration.

29-05

Vacant

29-06 **Fees, fee categories, fee transmittal and reporting.**

- (A) The fees shall be established using the categories prescribed in this rule and the cost methodology prescribed by rule 29-06.1 of the Chapter 29 of the Medina County Sanitary Code. The department of health shall receive the portion of each permit fee for HSTS installation or replacement as required under paragraph (B) of this rule.
- (B) The board of health shall collect a fee outlined in HB 119 (127th General Assembly) on behalf of the Department of Health and forward the fee to the Department.
- (D) Fees established by a board of health shall be specified in accordance with the following categories:
 - (1) An application for a site review of an HSTS.
 - (2) Permit for the installation or replacement of an HSTS.
 - (3) Permit for the alteration of an existing HSTS.
 - (4) Operation permits for HSTS.
 - (5) Registration of installers, service providers and septage haulers as required in paragraph (D) of rule 29-04 of this Chapter.
 - (6) Vehicle permits for septage haulers as required in paragraph (A)(2) of rule 29-04.2 of this Chapter.
 - (7) An application for a variance under rule 29-18 of this Chapter.
 - (8) Additional fees may be established by the board of health for the purposes of managing the HSTS program, including fees for the collection and examination of any necessary samples taken to determine compliance with this chapter.

29-06.1 **Cost methodology.**

- (A) Commencing one year after the effective date of this rule, the board of health shall use data from its previous fiscal year to calculate the actual cost of administering Chapter 29 of the Medina County Sanitary Code. The board of health shall calculate the actual cost of the program including the following functions:
- (1) The administration and enforcement of the site and plan review, permitting and installation and inspections of HSTS. Inspections shall include any site inspections, installation inspections, and operation inspections required in this Chapter.
 - (2) The administration and enforcement of the installation, and inspections of semi-public sewage systems. Inspections shall include any installation inspections and operation inspections required as specified in contract with OEPA.
 - (3) Operational oversight of HSTS.
 - (4) Registration of installers, service providers and septage haulers.
 - (5) Permitting of vehicles for septage hauling.
 - (6) Review of land application sites for septage as required under rule 29-16.2 of this Chapter.
 - (7) Conducting sampling as necessary to determine compliance with this chapter.
 - (8) Provision of education and consultation services.

29-07 **General provisions and prohibitions.**

These provisions and prohibitions provide an overview of the conditions that impact the use of an HSTS, establish general criteria for HSTS performance, limit the use of discharging HSTS, and identify other regulations related to the use of an HSTS. The purpose of this rule is to encourage preliminary consideration of HSTS suitability and general regulatory requirements prior to investing in required activities for compliance with other provisions of this chapter.

- (A) The siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an HSTS shall comply with this chapter. An HSTS subject to this chapter shall not be installed or operated without an approved permit from the board of health. Unless connected to a sanitary sewerage system or utilizing an existing HSTS, a dwelling or structure shall not be occupied or utilized without an approved HSTS.
- (B) An HSTS shall serve only one dwelling.
- (C) A HSTS shall comply with the following performance requirements and prohibitions:
 - (1) An HSTS shall be maintained in proper working condition.
 - (2) An HSTS shall comply with the conditions specified in an installation and/or operation permit issued by the board of health.
 - (3) No HSTS or part thereof shall create a public health nuisance or safety hazard nor pollute surface water or ground water.
 - (4) No HSTS shall discharge to any ditch, stream, pond, lake, natural or artificial waterway, drain tile, other surface water conveyance or to the surface of the ground unless authorized by an NPDES discharge permit pursuant to Chapter 6111. of the Revised Code or otherwise specified in this chapter.
 - (5) No HSTS shall discharge to an abandoned well, drainage well, a dry well or cesspool, a sink hole or other connection to ground water.
 - (6) No HSTS shall receive water from roof drains, foundation drains, clear water sumps, swimming pools, or other sources that do not convey or generate sewage from the structures served by the HSTS.
 - (7) No HSTS shall be permitted for the holding, treatment, or dispersal of industrial waste or storm water for industrial activities. For the purpose of this rule, the normal use of housekeeping products does not constitute industrial waste.
- (D) An HSTS shall utilize soil absorption as the means for final treatment and/or dispersal, except for the HSTS conditions and limitations described in paragraph (D)(2) of this rule when soil absorption is not feasible as demonstrated through the site and soil evaluation conducted in accordance with rule 29-08 of this Chapter.

- (1) An HSTS shall not be permitted for use in any new lot or new subdivision when soil absorption is not feasible.
- (2) When soil absorption is determined to be infeasible by the board of health for a replacement HSTS for an existing dwelling or a new HSTS for an existing lot, a discharging HSTS shall only be permitted by the board of health in compliance with NPDES requirements.

The board of health shall not permit or otherwise authorize the use of an HSTS that would violate the conditions of this paragraph.

(E) HSTS shall be sited in compliance with this chapter including the following:

- (1) Sufficient suitable area shall be available to accommodate an HSTS including a designated area for complete relocation and replacement of an HSTS, the minimum horizontal isolation distances as required in paragraph (E)(3) of this rule, and any additional horizontal isolation distance determined by the board of health as necessary to accommodate lateral flow due to shallow limiting conditions identified in the soil and site evaluation conducted in accordance with rule 29-08 of this Chapter.
- (2) Sites on which private water systems are to be installed shall be of sufficient area to provide horizontal isolation of the private water system from both the proposed HSTS and the area intended for any HSTS relocation or replacement on this or adjacent sites as required in paragraph (E)(3) of this rule and Chapter 3701-28 of the Administrative Code.
- (3) An HSTS shall maintain minimum horizontal isolation distances of
 - (a) Ten feet from any utility service line, driveway or other hardscape, property line or right-of-way boundary, and any building or other structure, and
 - (b) Fifty feet from any water supply source, surface water impoundment, lake, river, or perennial stream.
- (4) A permanent legal easement shall be required for any portion of an HSTS not sited on the same parcel as the structures or dwelling served by the HSTS. When an easement is required under this paragraph, an HSTS installation permit shall not be issued by the board of health until a certified copy of the legally recorded easement is provided.

(F) HSTS shall not be sited under the following conditions:

- (1) An HSTS shall not be sited in an area identified as a flood way, nor within any part of a one-hundred year flood plain.
- (2) An HSTS shall not impact or be sited within a jurisdictional wetland subject to a U.S. army corp of engineers 404 permit and/or OEPA 401 certification or within an isolated wetlands subject to sections 6111.02 to 6111.029 of the Revised Code.

- (3) An HSTS shall not be sited within the sanitary isolation radius of a public water system well as determined in accordance with rule 3745-09-04 of the Administrative Code.
- (4) An HSTS shall not be sited under soil and site conditions that prohibit compliance with this chapter. The following are examples of conditions that may be prohibitive or may require additional siting, design or management conditions:
 - (a) Exposed bedrock, boulders, stones, gravel, and coarse sand at or above the surface of the ground or underlain within a foot of the ground surface.
 - (b) Slopes in excess of the limits of the design, installation, maintenance or operation of the proposed HSTS or when there is risk of slippage, slump, or land slide.
 - (c) Filled, reclaimed, or disturbed areas where soil and site conditions may not be adequate to provide treatment and/or dispersal.
- (G) The board of health shall consult with appropriate sewer entity personnel as necessary to determine sanitary sewer accessibility:
 - (1) An HSTS shall not be sited, permitted, or installed where a sanitary sewage system is accessible and has capacity to accept additional flows.
 - (2) An HSTS shall not be altered, replaced, maintained, operated, or used where a dwelling or structure is accessible to a sanitary sewerage system.
 - (3) Whenever a sanitary sewerage system becomes accessible to a dwelling or structure served by an HSTS, the dwelling and/or structures shall be connected to the sanitary sewage system and the HSTS abandoned in accordance with rule 29-17 of this Chapter.
- (H) In the absence of other legal authority governing the access to a sanitary sewage system, the board of health shall determine accessibility and the conditions and schedule for sanitary sewer connection and abandonment of an HSTS. The board of health may utilize the criteria established in division (C) of section 6117.51 of the Revised Code for an existing HSTS.
- (I) No person shall discharge, or permit to be discharged, treated or untreated sewage, the overflow drainage or contents of a sewage tank, or other putrescible, impure or offensive waste, into an abandoned well, spring or cistern or into a natural or artificial well, sink hole, crevice extending into bedrock, stream, ditch, or surface of the ground.

29-08 **Site and soil evaluation.**

This rule provides criteria and procedures for site and soil evaluation. Site and soil characteristics must be observed, described, and evaluated and area risk factors considered and identified. This information provides the basis for determining the feasibility of siting an HSTS and, if feasible, the conditions and limitations for sewage treatment and dispersal to be addressed in a layout plan or design plan.

- (A) The board of health shall conduct a site review for any proposed HSTS installation to complete, or review the completeness of, the site and soil evaluation information required in this rule. Any person conducting a site and soil evaluation shall assess and record information in accordance with this rule. The board of health shall utilize the site and soil evaluation information to determine the feasibility of siting an HSTS in compliance with this chapter.
- (B) The site and soil evaluation shall include the assessment and documentation of the following:
 - (1) Designation of the described soil boring and/or excavation locations and the information required in paragraphs (B)(3) and (B)(4) of this rule on the site plan required in rule 29-09.1 of this Chapter or on a preliminary site drawing adequate to provide the required site and soil evaluation documentation. A scaled site drawing shall at least include:
 - (a) The dimensions of the lot or the proposed lot;
 - (b) Any existing dwellings and/or structures and any proposed dwellings and/or structures if known;
 - (c) Any site disturbances, existing driveways and other hardscapes, and proposed hardscapes or related site disturbances if known;
 - (d) Location of all private water systems and surface water features on the lot and within fifty feet of the lot boundary, or within fifty feet of the locations specified in paragraph (B)(3) of this rule; and
 - (e) North orientation arrow.
 - (2) Record of site and soil characteristics for each soil boring and/or excavation location designated in paragraph (B)(1) of this rule using USDA NRCS nomenclature on a form prescribed by the including but not limited to:
 - (a) Site descriptions: landscape position, slope, vegetation, drainage features, rock outcrops, erosion and other natural features;
 - (b) Detailed soil profile descriptions: color, texture, structure, consistence, and the depth of each soil horizon or layer and characterization of all limiting conditions; and

- (c) Documentation of any relevant surface hydrology, geologic and hydrogeologic risk factors for the specific site or in the surrounding area that may indicate vulnerability for surface water and ground water contamination.
 - (3) Drawings and dimensions on the site plan or site drawing of at least two locations on the site that have been evaluated and determined to have the capacity for the treatment and/or dispersal of sewage from the proposed dwelling or structures including adequate length parallel to the land contour to accommodate the soil and linear loading rates for the conditions recorded.
 - (4) Identification on the site plan or site drawing of the area for which each soil profile description is representative and designation of any areas with conditions that would prohibit or impact the siting of an HSTS in accordance with this chapter.
- (C) An installation permit for an HSTS shall not be approved by the board of health in the absence of an evaluation conducted in accordance with this rule:
- (1) The board of health shall assure that a site and soil evaluation is conducted in accordance with this rule and shall:
 - (a) Determine compliance with soil absorption requirements in paragraph (D) of rule 29-07 of this Chapter, and
 - (b) Consider area risk factors related to the subdivision and lot review requirements in rule 29-08.1 of this Chapter and permitting requirements in rule 29-09 of this Chapter, including risks of pathogen or nutrient contamination to surface or ground water.
 - (2) The board of health may only waive the requirements of paragraphs (B)(2) and (B)(3) of this rule when soil treatment and/or dispersal is not feasible for an HSTS replacement for an existing dwelling due to the absence of adequate area for sizing the HSTS.

29-08.1 **Subdivisions and new lots.**

This rule addresses the critical prerequisite activities of assessing sewer accessibility, HSTS feasibility, and any area risk factors prior to the recording of a lot or subdivision. Informing property owners, land developers, and prospective buyers of the provisions of this rule, and effective implementation of these provisions, allows for a proactive versus reactive approach to proposed HSTS development and should prevent future problems when siting an HSTS. This rule is not intended to serve as a substitute for planning, zoning, sanitary sewerage, or land use responsibilities exercised by other authorities.

- (A) The board of health review required in paragraph (D) of this rule shall be coordinated, as applicable, with authorities having responsibility for the requirements established in Chapter 711. of the Revised Code, zoning, recording of parcels of land, or other land use authorities. Regarding sanitary sewerage accessibility, the board of health shall consult with appropriate sewer entity personnel such as a municipal or county sanitary engineer to confirm sewer accessibility and plans for sewer extensions by a municipality, sanitary district, regional water and sewer district, or other management entity or wastewater planning authority responsible for sanitary sewerage.
- (B) An HSTS shall not be sited, installed, or permitted for a proposed new lot or subdivision when any of the following conditions have been met:
 - (1) A proposed lot or subdivision is accessible to a sanitary sewerage system in accordance with criteria established by the OEPA.
 - (2) Siting an HSTS on any proposed new lot or subdivision lot would violate the prohibitions in paragraph (F) of rule 29-07 of this Chapter.
 - (3) A proposed HSTS would require an NPDES permit.
 - (4) Other conditions which would prohibit compliance with this chapter.
- (C) Any person proposing a subdivision or new lot or lots for review by the board of health shall submit sufficient information to determine compliance with the requirements of this chapter. Minimum information to be submitted for review includes the following:
 - (1) A statement indicating that siting HSTS on the proposed lot, lots, or subdivision would not violate the prohibitions in paragraph (B) of this rule.
 - (2) For a proposed subdivision having greater than twenty-five lots, or for any fewer numbers of lots as required by the board of health to identify risks to surface and ground water resources, the evidence of compliance with paragraph (B)(1) of this rule shall include written documentation from OEPA.
 - (3) The acreage of each proposed lot and the total land area of a proposed subdivision.

- (4) Scaled drawing showing proposed lot lines with detail on site conditions including vegetation, approximate slopes, and drainage features. For new lot or subdivision proposals having more than five lots, or for a fewer number when required by the board of health, the scaled drawing shall also include topographic detail with contour lines sufficient to determine slope and adequate length along the contour in the areas considered suitable for HSTS.
 - (5) All site and soil evaluation information required in paragraph (B) of rule 29-08 of this Chapter. For the purposes of this rule, the board of health may accept or require an order one soil survey of sufficient detail to provide the soil profile information required in paragraph (B)(2)(b) of 29-08 of this Chapter. An order one soil survey shall be prepared by a professional soil scientist certified by the association of Ohio pedologists or ARCPACS.
- (D) Proposed subdivisions and new lots shall be reviewed by the board of health to determine if there are any restrictions on the use of HSTS. The board of health shall review readily available resources including but not limited to source water assessment reports for public water systems and ground water pollution potential maps to assess risks to surface and ground water from proposed onsite sewage treatment and may consult with the OEPA for advice on any water quality concerns. For subdivisions proposed in environmentally sensitive areas or of any density or number determined to present increased risk to surface or ground water resources, the board of health may require a responsible management entity and/or establish a household sewage treatment district in accordance with paragraph (B)(5) of rule 29-16.1 of this Chapter.
- (1) For the purposes of this rule, the board of health shall provide written documentation to the person proposing a subdivision or new lot or lots of noncompliance with this chapter if the information submitted is incomplete, inaccurate, or the board of health makes a determination that the provisions of this chapter cannot be met. Upon acceptance of a complete submittal, the board of health shall make a determination within forty-five calendar days.
 - (2) When the board of health determines that the provisions of this chapter can be met, the board of health shall provide written documentation of compliance to the person proposing a subdivision or new lot or lots subject to HSTS installation permit approval by the board of health. The written documentation of compliance with this chapter and the board of health review required by this rule shall not preclude the denial of an installation permit pursuant to rule 29-09 of this Chapter if conditions change.

29-09 **Permits for installation, alteration, and operation.**

This rule includes the provisions for site review, issuing a permit, and determining compliance with the conditions of a permit. Given the limitations on the permitting of a discharging HSTS for a new home, owners and builders are strongly encouraged to obtain an approved site review application prior to the start of construction to assure that a soil absorption HSTS can be sited. Permits for installation and operation provide a mechanism for regulatory oversight of the siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment of an HSTS.

- (A) The board of health shall require a site review application for any proposed installation of a new or replacement HSTS. No person intending to install a new HSTS or replace an existing HSTS shall be issued an installation permit without the board of health first approving a site review application.
 - (1) A site review application shall include the application fee and all information required by the board of health, including the following as applicable:
 - (a) The completed site and soil evaluation as required in rule 29-08 of this Chapter and the design plan or layout plan required in rule 29-09.1 of this Chapter for the installation of an HSTS for new construction, or
 - (b) For purposes of siting a replacement HSTS, the completed site and soil evaluation as required in rule 29-08 of this Chapter when the board of health is assisting the owner and/or installer with the design or layout plan in accordance with paragraph (B) of rule 29-09.1 of this Chapter.
 - (2) A site review application for an HSTS alteration may be required by the board of health, and when required, shall contain all pertinent information and the application fee required by the board of health. In the case where an alteration involves the expansion of a soil absorption component, the board of health shall determine when a site and soil evaluation shall be conducted or required in compliance with rule 29-08 of this Chapter.
 - (3) The board of health shall review the application information to determine whether the proposed design plan or layout plan, or proposed HSTS alteration as applicable, is in compliance with this chapter. When the board of health determines that a proposed HSTS is subject to the NPDES requirements of paragraphs (C)(4) and (C)(5) of rule 29-07 of this Chapter, the board of health shall assure compliance with NPDES requirements prior to issuing a permit in accordance with paragraph (B) of this rule.
 - (4) The board of health shall deny a site review application if the application information is incomplete or inaccurate or if the application information, site review by the board of health, or site and soil evaluation indicates that the provisions of this chapter cannot be met.

- (5) The board of health shall approve a site review application when the information, site review by the board of health, and site and soil evaluation demonstrate that the provisions of this chapter can be met. An approved site review application shall be valid for two years from the date of approval.
- (B) No person shall install or replace an HSTS without an approved and valid installation permit issued by the board of health. No person shall alter an HSTS without an approved and valid alteration permit issued by the board of health. The installation, replacement, or alteration of an HSTS shall only be conducted by an installer registered in compliance with rule 29-04.1 of this Chapter except in the case of a homeowner who may install, replace, or alter an HSTS for a single family dwelling that will serve or serves as the homeowner's primary permanent residence when competency is demonstrated through compliance with the testing requirements of paragraph (D)(2) of rule 29-04 of this Chapter.
- (1) An installation permit, or alteration permit as applicable, shall not be issued by a board of health without an approved and valid site review application as required in paragraph (A) of this rule. The board of health may deny the approval of an installation or alteration permit if there are changes to site conditions or the site review application information and may require re-application including a fee to reapply.
 - (2) The board of health may specify terms and conditions of an installation or alteration permit governing the siting, design, installation, alteration, operation, monitoring, maintenance, or abandonment of the HSTS.
 - (3) An approved installation permit or alteration permit issued by the board of health shall be valid for one year from the date of issuance or until the installation or alteration is completed and approved by the board of health within the one year period. The board of health may extend the permit period for an additional six months for permits issued pursuant to this rule.
 - (4) An approved installation or alteration permit may be revoked by the board of health prior to its expiration if a change in site conditions, the quality of the installation or alteration work, or other circumstances arise that may prevent compliance with this chapter.
 - (5) The board of health shall inspect a completed installation or alteration. The as-built record, any applicable system start-up information, or other documentation required in rule 29-09.1 of this Chapter shall be available at the time of inspection. The board of health may require advance notification from the registered installer or the designer of the HSTS to accommodate inspections during the progress of the installation or alteration.
 - (6) The board of health shall approve an installation or alteration upon the satisfactory completion of all work and documentation required by this chapter and the terms and conditions of the permit.
- (C) No person shall operate an HSTS without an approved and valid operation permit from the board of health.

- (1) An operation permit shall be in effect upon board of health approval of an installation, a replacement, or an alteration of an HSTS. The responsible party, whether it is the HSTS owner, a responsible management entity recognized by the board of health, or both, shall be subject to the terms and conditions of an operation permit.
- (2) The board of health shall specify any operation permit fees and the terms and conditions of the operation permit consistent with this chapter governing the operation, monitoring, maintenance, and abandonment of the HSTS. The board of health shall require an HSTS service contract as a condition of an operation permit in accordance with this chapter and the requirements of paragraph (C)(5) of this rule.
- (3) A board of health shall inspect an HSTS not later than twelve months after its installation to ensure that the system is not a public health nuisance, operating properly and shall comply with the reporting requirements as specified in paragraph (F) of rule 29-06 of this Chapter.
- (4) An operation permit may be renewed, suspended, or revoked by the board of health subject to the requirements of this chapter, the terms and conditions of the permit, and the O&M management provisions established by the board of health in accordance with rule 29-16.1 of this Chapter. An operation permit shall be valid until it expires or is suspended or revoked by the board of health. An operation permit is subject to suspension or revocation conditional upon the responsible party's or parties' compliance with this chapter and the terms and conditions of the permit.
- (5) An operation permit shall require a service contract for an HSTS under the following conditions and as otherwise required by the board of health:
 - (a) Any HSTS subject to an NPDES permit.
 - (b) Any HSTS with a pretreatment component subject to paragraph (H) of rule 29-12 of this Chapter.
 - (c) Any HSTS with a soil absorption component subject to paragraphs (C)(3) of rule 29-13 of this Chapter.
 - (d) When required as a condition of an HSTS component or system approval granted by the director of health in accordance with paragraph (D) of rule 29-18 of this Chapter.

29-09.1 **Layout plans, design plans and as-built records.**

This supplemental rule provides detail on layout plan and design plan options for new and replacement installations. To prevent avoidable problems during installation, a layout plan or a design plan is included with the site review application to assure proper HSTS siting in advance of a permit being issued. This rule also provides the requirements for the as-built record to be completed by a registered installer to document that an HSTS has been installed in accordance with all applicable rules and plan requirements. The intent of this rule is to assure adequate information and documentation for site review application and permit approval and to assure installation in accordance with applicable rules and approved plans to promote long term HSTS operation.

(A) A registered installer may submit a layout plan for the installation of a new or replacement HSTS in compliance with rule 29-13.1, 29-13.2 or rule 29-13.3 of this Chapter. A layout plan may substitute for the design plan required in paragraph (B) of this rule when the proposed HSTS does not utilize timed micro-dosing. A layout plan shall include:

- (1) A site plan drawn to scale on eight and a half inch by eleven inch or larger paper showing HSTS layout elevations corresponding to flagged or staked locations at the site. The designated HSTS area shall be protected from disturbance. The site plan shall also verify horizontal isolation distances and include the designated area for complete relocation and replacement of the HSTS as required in paragraph (E) of rule 29-07 of this Chapter.
- (2) Written details on the daily design flow, selected loading rates based on the site and soil evaluation, system configuration with absorption area dimensions, and, if applicable, pump selection information and pressure distribution network description and calculations.
- (3) Product information and written description of materials and system components including size of all tanks and distribution component materials including mechanical distribution and diversion mechanisms.
- (4) Manufacturer O&M requirements or instructions for components not addressed in general O&M information available through the board of health or the department of health.
- (5) Any additional information requested by the board of health related to components, materials, and installation or O&M specifications.

(B) A design plan in compliance with this paragraph shall be required unless a layout plan is provided by a registered installer in compliance with paragraph (A) of this rule. A design plan shall be legible, readable, and of sufficient detail to demonstrate compliance with the provisions of this chapter. A design plan shall include:

- (1) Documentation of the rationale for design decisions used to address site and soil limitations including justification for selected loading rates and the use of any soil depth credits. The site and soil evaluation shall be available with the design plan.

- (2) Descriptions of the dwelling and/or structures to be served by the HSTS with a designated daily design flow including any anticipated variations. The HSTS shall be designed to handle peak daily design flows or the design shall include flow equalization with designated reserve and surge capacity and timed dosing in compliance with rule 29-11 of this Chapter.
- (3) Description of the treatment processes used to meet performance requirements including information necessary to confirm compliance with any applicable NPDES effluent quality standards or applicable standards established in rule 29-12 of this Chapter. In addition, if applicable, documentation of pollutant concentrations and mass loading in excess of residential waste strength, including the design for treatment to reduce higher strength wastewater to typical residential waste strength prior to distribution to a soil absorption component.
- (4) Plan notes designating that the HSTS area shall be protected from disturbance, and additional plans notes as needed to explain any siting, installation, or O&M requirements or restrictions, including any preconstruction meetings at the site, conditions on the selection of an installer, HSTS start-up procedures or other designer-designated conditions.
- (5) A site plan, drawn to a scale of one inch equals fifty feet or less, sufficient to demonstrate compliance with this chapter including but not limited to:
 - (a) North directional arrow.
 - (b) Identified vertical and horizontal reference point or benchmark with its location clearly marked at the site.
 - (c) Designation of the described soil boring and/or excavation locations from the soil and site evaluation.
 - (d) Outline of existing and proposed structures, driveways and other hardscapes, and other related items on the property.
 - (e) Location of HSTS components and a replacement area.
 - (f) The dimensions of the property with horizontal isolation distances to the HSTS and replacement area from the items designated in paragraph (E) of rule 29-07 of this Chapter, including but not limited to private water systems and surface water features.
 - (g) Topography for the areas of the dwelling and/or structures to be served and the proposed HSTS and designated replacement areas including an indication of drainage features in these and surrounding areas.
 - (h) Designation of any easements, disturbed areas, or wooded areas within fifty feet of the proposed HSTS and replacement area, or other site characteristics or obstructions that may affect the installation or operation of the HSTS.
 - (i) Means of access for O&M equipment to service the HSTS.

- (6) Enlarged plan view drawings of the HSTS components if the site plan scale does not allow for sufficient detail.
 - (7) Profile drawing showing elevations relative to surface grade sufficient to demonstrate compliance with this chapter including the invert elevations necessary to assess the hydraulic profile of HSTS components and any gravity or pumped discharge outlet elevations.
 - (8) Plan and section views for the HSTS components and/or attachments of component and material specification information.
 - (9) Installation and O&M instructions.
 - (10) Plan note requiring that the HSTS installer consult with the designer regarding any intended changes to the plan and requiring installer/designer coordination on the provision of an accurate as-built record.
- (C) An as-built record shall be required to be completed by the registered installer for a completed HSTS installation or alteration as a condition of the installation or alteration permit and as a condition of registration in accordance with rule 29-04.1 of this Chapter. The as-built record does not substitute for a layout plan or design plan required in accordance with this rule. A designer shall provide oversight as necessary to assure that the registered installer prepares an as-built record documenting installation in accordance with a design plan prepared in accordance with paragraph (B) of this rule. An as-built record shall include:
- (1) A legible record on eight and a half inch by eleven inch graph paper or larger pages with copies provided to the owner and the board of health for inclusion in the permit file. Use of layout plan or design plan documents or as-built template forms may be acceptable.
 - (2) Any changes to the approved design plan or layout plan including distances from installed HSTS components to any items having applicable horizontal isolation distances. A change in location of an HSTS from that designated on a layout or design plan shall not be made without prior approval by the board of health and shall not violate horizontal isolation distances required by this chapter.
 - (3) A designated vertical and horizontal reference point or benchmark with its location marked at the site.
 - (4) Plan view drawing with elevations for installed HSTS components per the design plan or layout plan.
 - (5) Profile drawings with pipe and component elevations to confirm depths for hydraulic flow, freeze protection, and other related installation functions.
 - (6) Any additional information for components and materials may be required by the board of health including but not limited to manufacturer or supplier provision of component installation or O&M instructions and verification of compliance with any start-up procedures or aggregate specifications.

- (7) The as-built record shall include a statement by the registered installer, and the designer as applicable in accordance with paragraph (B)(10) of this rule, indicating that the HSTS was installed in accordance with all applicable rules and plan specifications.

- (D) A registered installer completing an as-built record in compliance with this rule or requesting a board of health inspection required in accordance with paragraph (B)(5) of rule 29-09 of this Chapter shall avoid delays that could result in damage to HSTS components and affect the HSTS operational performance.

29-10 **Sewage source, building sewer, and related fixtures.**

This rule addresses the flow and waste strength characteristics that will vary depending on the source of the sewage to be treated by an HSTS. Also considered in this rule are other conditions that may impact waste strength and flows to a building sewer. All such conditions need to be identified and understood prior to considering the design of an HSTS.

- (A) The owner or owner's agent shall provide information on the sources of sewage from the dwelling or structures to be served by an HSTS for the board of health determination of compliance with this rule. The board of health may require submission of building and plumbing plans including plumbing fixture details and other information as needed.
- (B) The daily design flow estimate for an HSTS shall comply with the following general provisions unless otherwise specified in this chapter:
 - (1) Except as provided in paragraphs (B)(2) and (B)(3) of this rule, the daily design flow for an HSTS shall be a peak flow of one hundred twenty gallons per day per bedroom.
 - (2) An increase in the daily design flow estimate for an HSTS shall be required by the board of health when there is an indication that the flows established in accordance with paragraph (B)(1) of this rule will be exceeded. Any required increase in daily design flow shall be documented on the installation permit and operation permit.
 - (3) A reduction in daily design flow may be approved by the board of health when the information submitted indicates conditions that justify reduced flow such as limited fixtures, waterless toilets, in-house graywater recycling, or other circumstances that may warrant a reduction in daily design flow. Justification for a proposed reduction in daily design flow shall be included in the site review application and, if approved, shall be documented on the installation permit and operation permit.
- (C) The waste strength estimate for an HSTS shall be determined for design purposes in accordance with the following general provisions unless otherwise specified in this chapter:
 - (1) Sewage generated by a dwelling served by an HSTS shall be judged to be typical residential sewage following primary treatment when the total suspended solids (TSS) content is not expected to exceed one hundred and fifty milligrams per liter (mg/L), the five-day biochemical oxygen demand (BOD₅) is not expected to exceed two hundred and fifty milligrams per liter (mg/L), or the contents of fats, oils, and greases (FOG) is not expected to exceed twenty five milligrams per liter (mg/L). Consideration shall be given to eliminating the use of garbage disposals in kitchen sinks to assist in maintaining residential waste strength below these maximum levels and to reduce residuals and the frequency of septage removal.

- (2) When the waste strength for an HSTS is expected to exceed or has exceeded the typical residential waste strength described in paragraph (C)(1) of this rule:
 - (a) The design plan shall include loading calculations using values in accordance with the loading table established by OEPA. Any variation from the loading table values shall be justified in the design plan including waste strength characterization information. Board of health approval for any reduction or increase in loading estimates shall be documented on the installation permit and operation permit.
 - (b) Additional pretreatment shall be provided to assure that the HSTS soil absorption component receives a waste strength within the range of typical residential sewage. The method of pretreatment to reduce waste strength shall be justified in the design plan, reviewed by the board of health for compliance with this chapter, and, if approved, shall be documented on the installation permit and operation permit.
 - (c) When an external grease interceptor is a component of the proposed pretreatment to reduce waste strength, the external grease interceptor shall be located, designed, and installed in a manner that will allow access for inspection and maintenance, including the following:
 - (i) A source segregated inlet line, when feasible;
 - (ii) Sized to account for flow volume and temperature; and
 - (iii) Watertight access risers extended to grade with secure covers.
- (D) Building sewers shall carry all sewage flow from the dwelling or structure, including graywater or other segregated sewage, and shall be connected to an HSTS in compliance with this chapter. Building sewers shall comply with the following:
 - (1) The elevation of a building sewer shall be aligned to accommodate the plan elevations of the subsequent HSTS components and shall be properly bedded in native soil or sand at a uniform grade of not less than one per cent or one eighth of an inch per foot.
 - (2) A building sewer shall be a minimum of ten feet from any household water supply source and water service line, unless otherwise specified in applicable state or local regulations.
 - (3) A building sewer shall be watertight, have a minimum diameter of four inches and be constructed of durable material conforming to ASTM D 2661 for ABS plastic pipe or ASTM D 2665 for PVC plastic pipe (type DWV) or equivalent. Pipe, fittings, and joining materials shall be chemically and physically compatible.

- (4) Cleanouts shall be required in a building sewer at any turn in the pipe greater than forty-five degrees and at the point a building sewer pipe exceeds one hundred feet and at every one hundred feet interval thereafter. A turn in the building sewer shall not exceed 45 degrees.
- (5) A building sewer shall allow for proper venting of HSTS components. Traps shall not be installed in a building sewer.
- (6) Casing or other form of protection shall be provided for any portion of a building sewer located in areas of vehicle traffic or when the building sewer is subject to other loads that may cause damage.

29-11 **Tanks, pumps, and controls.**

This rule addresses the HSTS components of tanks, pumps, and controls, including dosing provisions and electrical requirements. The purpose of the rule is to assure that tanks are watertight and structurally sound with adequate capacity, and to assure that tanks, pumps, and controls are selected, installed and maintained to meet intended performance over time.

(A) Tanks subject to this chapter shall be manufactured to be watertight and structurally sound including septic tanks, other treatment component tanks, dosing tanks, pump vaults, HSTS holding tanks and privy vaults, or other applicable HSTS components.

(1) The board of health may require watertight testing of any HSTS component and accept certifications granted by the Ohio Department of Health.

(2) Tank connections shall comply with the following specifications:

(a) Joint connections shall be watertight. Any joint sealants for concrete riser connections and tank seams shall be of a butyl rubber blend meeting material, manufacture, and physical requirements specifications of ASTM C 990.

(b) Inlet and outlet pipe connections to a tank shall be watertight. Connectors shall be provided by the tank manufacturer and shall meet material and manufacture specifications of ASTM C 923.

(3) The board of health may request manufacturer verification that any HSTS component is structurally sound. The structural integrity of an HSTS component may be demonstrated through the manufacturer's provision of component design information verifying structural capacity for expected loads and conditions as certified by a professional engineer or through structural tests conducted in accordance with recognized standards for the component or component materials.

(C) Septic tanks used in an HSTS shall be labeled with the manufacturer's name and the tank capacity on the top of each septic tank and shall comply with the following requirements and specifications:

(1) Minimum liquid capacities:

(a) One to two bedrooms – one thousand gallons

(b) Three bedrooms – one thousand five hundred gallons in two tanks or compartments

(c) Four to five bedrooms – two thousand gallons in two tanks or compartments

(d) Six or more bedrooms – one thousand gallons plus an additional 250 gallons for each bedroom in two tanks or compartments.

In two compartment tanks, the first compartment shall not be less than one half or more than two-thirds of the total capacity of the septic tank and the transfer port in the center wall shall ensure transfer of liquid from the clear zone only. When using two tanks, the septic tanks shall be connected in series, and if differing in size, the first tank in the series shall be the larger of the two.

- (2) The invert level of the inlet shall be not less than two inches above the liquid level of the tank. A vented inlet baffle or tee shall be fitted by the tank manufacturer to divert the incoming sewage downward and shall penetrate at least six inches below the liquid level but shall not be greater than that for the outlet device.
 - (3) Unless otherwise specified in this chapter, the outlet shall be fitted by the tank manufacturer with a vented tee or baffle that shall extend not less than six inches above and not less than eighteen inches below the liquid level of the tank, and shall include an effluent filter device that retains solids greater than one sixteenth of an inch in size.
 - (4) The septic tank shall have a liquid drawing depth of not less than four feet and the air gap between the liquid level and internal surface of the top of the tank shall be at least nine inches. An alternative means of compliance with this paragraph includes an air gap of at least fifteen percent of the liquid capacity by volume with the outlet baffle depth required in paragraph (C)(3) of this rule adjusted as needed to access the middle of the clear zone.
 - (5) The septic tank access openings shall be located above the inlet and outlet of the tank and shall allow adequate space for pumping of the tank and inspection and maintenance. An access opening and cover shall be provided above the compartment wall in a two compartment tank unless the transfer port in the center wall is a pass through opening that allows a shared liquid level in both compartments. The cover or riser lid shall weigh a minimum of sixty-five pounds or be secured against unauthorized access.
 - (6) The tank shall be installed with a minimum of two watertight risers extended to grade or above grade to provide access to the inlet and outlet of the tank. The connection of the riser to the tank and the connection of additional riser sections shall incorporate joint grooves or adapters to prevent lateral movement of the riser. Riser lids shall prevent infiltration of water and have secured covers.
 - (7) The septic tank shall be installed, bedded, and backfilled in accordance with manufacturer specifications to assure the structural integrity of the tank. The tank shall be level. To allow for ease of access, the septic tank shall be installed no deeper than two feet below grade unless the terms of the installation permit allow for greater septic tank depth and the tank is designed to withstand the additional load.
- (D) Dosing tanks shall be designed and manufactured in accordance with the following:

- (1) Dosing tanks shall be easily accessible and have secured covers. All connections shall comply with applicable specifications under paragraphs (A)(2)(a) and (A)(2)(b) of this rule.
 - (2) Dosing tanks shall be selected to accommodate the volume below maximum drawdown, the maximum design dose including any drainback, and the design portion of the reserve and surge capacities as applicable. The HSTS design shall provide a reserve capacity for high water alarm events that is not less than the daily design flow. If time dosed, the HSTS design shall accommodate combined reserve and surge capacities of not less than one hundred and fifty per cent of the daily design flow.
 - (3) A septic tank second compartment or a second septic tank in series may be used for low volume dosing if all conditions under paragraph (D)(2) of this rule are met and a filtered step system or screened vault is used in lieu of, or in addition to, the effluent filter device required under paragraph (C)(3) of this rule.
- (E) Pumps shall meet the following specifications:
- (1) A pump shall be rated for effluent service by the manufacturer and be a UL or CSA listed product.
 - (2) The pump shall be properly sized to meet the design flow rate and total dynamic head requirements specified for the HSTS.
 - (3) A quick disconnect shall be accessible in the pump discharge piping, with adequate lift attachments provided for removal and replacement of the pump and water level control assembly without having to either enter the dosing tank or pump the tank to lower the liquid level.
- (F) A dosing siphon may only be used if the HSTS design requirements, including the design flow rate, dose capacity, and any pressure distribution parameters, can be met and maintained.
- (G) Switches, controls, alarms, and electrical components are required for the installation of mounds, drip distribution and all other at grade installations or installations where timed dosing is utilized shall be UL or CSA listed products, shall be installed in a manner easily accessible for routine monitoring and maintenance, and shall comply with the following:
- (1) Switches and controls shall accommodate the minimum and maximum dose capacities of the specified distribution component.
 - (2) An elapsed time meter, counter, and/or flow meter shall be included in those HSTS utilizing timed dosing. Time dosed HSTS shall include flow meters, counters, and control panels with programmable timers, manual pump operation, test features, and as applicable, adjustable override settings for high water alarm conditions.
 - (3) Controls shall have both audible and visual alarms. Alarms and controls shall be on a separate frequently used circuit from dedicated circuits for each pump or motor. The board of health may require that the alarm be

located in closer proximity to the dwelling or structure when the HSTS location is remote.

- (4) Control panels and alarms shall be mounted in an easily accessible interior or exterior location, shall be field-tested to assure compliance with the HSTS specifications, and shall include written instructions related to standard operation and alarm events.
- (H) The designer and/or installer shall assure that all electrical wiring meets the national electric code.
- (I) HSTS components described in this rule shall be installed, operated and maintained as specified by the manufacturer or the approved plan.

29-12 **Effluent quality standards and pretreatment provisions.**

Effluent quality standards are established through various means including NPDES permit requirements, provisions in this rule, and under risk conditions that may warrant nutrient reduction. This rule addresses secondary or higher quality effluent from a pretreatment component. The provisions of this rule relate to the pretreatment component approval process and the selection of pretreatment components in compliance with effluent quality standards established in this rule or NPDES permit requirements when applicable.

(A) The following effluent quality standards are performance standards applied in advance of effluent distribution to a soil absorption component, excluding effluent generated from a septic tank or other means of primary treatment. Pretreatment components approved in compliance with this rule are deemed to comply as applicable for effluent quality standards in this paragraph and are not subject to routine sampling for performance monitoring.

(1) BOD₅/TSS standard – Compliance with this standard requires that effluent meet the thirty-day average of less than thirty milligrams per liter (mg/L) for five-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) to utilize HSTS sizing criteria addressed in paragraph (F)(1)(a) of rule 29-13 of this Chapter.

(2) Fecal coliform standards – Compliance with the pathogen reduction standards listed below requires that effluent meet the thirty-day geometric mean of the standard to utilize the soil depth credits or other applicable provisions of rule 29-13 of this Chapter.

(a) less than or equal to ten thousand colonies/one hundred mL allows for a one foot soil depth credit.

(b) less than or equal to two hundred colonies/100 mL required for restricted surface application

(c) less than or equal to twenty colonies/one hundred mL required for unrestricted surface application

Alternate E.coli standards may also be used to determine compliance if approved by the director of health.

(3) Nutrient standards – Nutrient reduction standards for pretreatment components shall be established when there is a significant risk of nutrient contamination to surface or ground water due to risk factors identified in the site evaluation or risk due to proximity to local, state, or federally recognized nutrient sensitive environments.

(C) Pretreatment components shall be designed to have effluent sampling capability at the endpoint of the treatment process prior to dispersal or discharge. In addition, pretreatment components combining separate treatment and disinfection units shall provide effluent sampling capability between the treatment and disinfection units. Disinfection units shall not discharge disinfection residuals to a soil absorption component.

- (D) Covers shall be secured and be easily accessible for monitoring and maintenance of the entire pretreatment component.
- (E) Pretreatment components that are housed in a septic tank second compartment or a second septic tank in series shall assure that the pretreatment component design, or the HSTS design which includes the pretreatment component, prevents passage of solids greater than one sixteenth of an inch in size.
- (F) Installation shall be conducted in a manner consistent with manufacturer or designer specifications to allow for proper O&M and monitoring of the pretreatment component. All pretreatment components shall have written O&M instructions with time lines for service and the registered installer shall provide the O&M instructions to both the owner and the board of health as a condition of installation approval.
- (G) HSTS pretreatment components shall be operated, maintained, and monitored as necessary to assure compliance with any applicable effluent quality standards established in this rule or the final effluent limitations set forth in a valid NPDES permit for HSTS. Sampling of NPDES discharges shall be performed in accordance with the NPDES permit monitoring requirements.
- (H) To assure that a pretreatment component is operated and maintained in accordance with O&M instructions for the life of the component, as a condition of the operation permit required in paragraph (C) of rule 29-09 of this Chapter, the board of health shall require the HSTS owner to obtain and maintain a service contract for any pretreatment component or components permitted for BOD₅-/TSS sizing reduction, pathogen reduction soil depth credit, nutrient reduction, or NPDES compliance.

29-13 **Soil absorption provisions.**

This rule addresses technical standards for the siting and design of a soil absorption component. The rule assigns vertical separation distances to allow for treatment in the soil profile and provides options for sites where adequate depth of suitable soil is not available. This rule applies to all HSTS soil absorption components and includes provisions for applying soil depth credits, determining loading rates, and general design and installation requirements. The three supplemental rules for leach lines, mounds, and drip distribution do not substitute for the provisions in this rule nor do they preclude the use of any soil absorption component that may be designed to comply with this rule.

- (A) Soil absorption components shall maintain a vertical separation distance of at least two (2) feet to any limiting condition with the exception of bedrock, rock, and other fragments which require at least four feet of vertical separation distance. HSTS utilizing timed micro dosing may maintain a vertical separation distance of two feet, except for bedrock, rock, and other fragments which require at least four feet of vertical separation distance. The vertical separation distance is the depth from the infiltrative surface of the distribution system of the soil absorption component to a limiting condition.
- (B) A minimum vertical separation distance of six inches of in situ soil and a total vertical separation distance of one (1) foot from the bottom of any infiltrative surface of a distribution system shall be maintained. A vertical separation distance established in paragraph (A) of this rule may be reduced through the use of soil depth credits as specified in paragraph (C) of this rule, provided the minimum six inches of vertical separation distance is maintained within suitable in situ soil. The area of the suitable in situ soil to be used for the soil absorption component shall be free of any limiting conditions within the horizontal and vertical distances designated for treatment and dispersal. HSTS installed in soils having a perched seasonal water table, or other limiting condition, between six inches and twelve inches below grade, shall utilize time dosing. When timed dosing is utilized, the HSTS design shall provide an application rate that distributes the peak daily design flow to the infiltrative surface at no greater than six square feet per point of dispersal with each dose not to exceed one eighth of the daily design flow distributed proportionally over a twenty-four hour period.
- (C) Soil depth credits for infiltrative surface elevation, pretreatment pathogen reduction and/or timed micro-dosed distribution shall be available as follows and in accordance with this chapter. A one foot credit may be applied for those limiting conditions requiring a two (2) foot vertical separation distance, except for bedrock, rock and other fragments requiring a four foot vertical separation distance. Soil depth credits may be used individually or in combinations not to exceed a maximum of two feet of credit:
 - (1) A one-to-one equivalency soil depth credit shall apply to soil absorption components that elevate the infiltrative surface of the distribution system to achieve vertical separation distance. Sand fill material in an elevated soil absorption component such as a mound system shall comply with applicable design specifications including the preparation of the sand soil interface and sand placement requirements. Sand fill requirements for use

in applying soil depth credits for elevation shall provide a minimum vertical separation distance of at least one (1) foot within a combination of elevated sand fill and suitable in situ soil. The loading rate for the sand fill material shall not exceed 1.0 gpd/ft².

Concrete sand meeting ASTM C 33 for fine aggregate may be used provided the material meets the following specifications:

- (a) An effective size in the range of 0.15 to 0.30 mm;
 - (b) A uniformity coefficient in the range of four to six;
 - (c) No more than twenty per cent by weight is gravel greater than two mm;
 - (d) No more than five per cent by weight is silt and clay less than 0.053 mm.
- (2) Soil depth credits shall apply for pathogen reduction as specified for effluent meeting the fecal coliform standards and pretreatment component requirements of rule 29-12 of this Chapter.
- (3) A soil depth credit of one foot shall apply when distribution to the soil absorption area provides for timed micro-dosing controlled at each point of application not to exceed one quarter gallon per dose and one gallon per four square feet of infiltrative area for each point of application per day. A soil absorption component in compliance with the requirements of rule 29-13.3 of this Chapter shall be eligible for this soil depth credit when the provisions of this paragraph are met.
- (D) The following requirements for effluent distribution to the soil absorption component shall be met, as applicable:
- (1) Gravity distribution of effluent shall be used in accordance with this chapter and any referenced design specifications in accordance with paragraph (F)(6) of this rule and in compliance with the following conditions and limitations:
- (a) Septic tank effluent may be distributed by gravity to an in situ soil absorption component meeting the vertical separation distances described under paragraph (A) of this rule.
 - (b) Effluent from a pretreatment component meeting the BOD₅/TSS soil loading rate selected in accordance with paragraph (E)(1)(a) of this rule may be distributed by gravity to in situ soil having at least three feet of vertical separation distance from the shallowest limiting condition.
 - (c) Effluent from a pretreatment component meeting the one foot pathogen reduction credit may be distributed by gravity to in situ soil having at least four feet of vertical separation distance to bedrock, rock, and other fragments provided there are no shallower limiting conditions.

- (d) Effluent meeting the BOD₅/TSS and/or pathogen reduction standards in rule 29-12 of this Chapter shall not be applied by gravity distribution to the infiltrative surface of in situ soils that have loamy sand or coarser textures and allow rapid access to ground water.
- (2) Uniform distribution of effluent across the infiltrative surface of the soil absorption component shall be used in accordance with this chapter and any referenced design specifications in accordance with paragraph (F)(6) of this rule and in compliance with the following conditions and limitations:
 - (a) Uniform distribution shall be required when applying effluent to the sand fill infiltrative surface of an elevated soil absorption component.
 - (b) Uniform distribution shall be required when using pretreatment component effluent quality meeting the BOD₅/TSS and/or pathogen reduction standards in rule 29-12 of this Chapter except as specified in paragraph (D)(1) of this rule.
 - (c) The means of distribution may include but are not limited to pressure distribution in a low pressure pipe system for leaching trenches or mounds and drip distribution in accordance with this chapter.
- (3) Surface application of effluent meeting fecal standards under paragraphs (A)(2)(c) and (A)(2)(d) of rule 29-12 of this Chapter shall comply with this chapter and any referenced design specifications in accordance with paragraph (F)(6) of this rule.
- (E) The soil absorption component area shall be of adequate size and configuration to disperse the effluent and prevent surface seepage. When sizing the soil absorption area the following requirements shall be met:
 - (1) Soil loading rates, including basal loading rates for sand fill systems, shall be based on effluent quality and on soil structure, texture, and consistence and shall be justified through reference to soil and site evaluation information and the loading rate estimates referenced in appendix I to this Chapter.
 - (a) The selection of soil loading rates based on effluent quality shall be limited to a rate for septic tank effluent or a rate for effluent meeting the BOD₅/TSS standard under paragraph (A)(1) of rule 29-12 of this Chapter.
 - (b) The structure, texture, and consistence of the most limiting in situ soil layer within the vertical separation distance shall be used to determine a soil loading rate.
 - (2) Linear loading rate (LLR) estimates shall be used to determine the required length of the distribution system parallel to surface contours and shall be based on soil characteristics, land slope, and depth to limiting conditions. LLR estimates shall be justified through reference to soil and site evaluation information and the loading rate estimates referenced in the appendix to this chapter. If site and soil conditions indicate horizontal subsurface flow, the minimum horizontal isolation distances shall be increased in undisturbed

areas around the perimeter or downslope of the soil absorption component as necessary for adequate dispersal and prevention of surface seepage.

(F) General requirements for designing an HSTS soil absorption component are as follows:

- (1) Effluent dispersal components shall be oriented parallel to natural surface contours and shall not be sited on slopes exceeding limitations specified in this chapter or applicable design manuals or product specification as referenced in accordance with this paragraph.
- (2) Observation ports shall be provided to monitor the infiltrative surface of the soil absorption component as required in this chapter and when determined to be necessary by the board of health.
- (3) Designs shall prevent damage to components or operational failures due to freezing temperatures.
- (4) For short term repairs or resting of a soil absorption component, easily accessible shut-off mechanisms shall be provided to allow for segregation of flows to portions of the soil absorption component. Examples of such mechanisms include but are not limited to shut-off valves at a mound manifold split or drop box plugs for serial distribution leach lines.
- (5) Pressure distribution networks shall have a means of measuring design pressure or operating head for both initial baseline measurement and future monitoring of orifice clogging and other network operations and shall include a means of scouring or flushing distribution laterals.
- (6) The design plan or layout plan for a soil absorption component may include referenced design manuals, proprietary soil absorption component specifications including those for gravelless and chamber products, or alternative aggregate product specifications provided these do not conflict with this chapter. Unless an available internet source for any referenced manual or specification is included in a design plan or layout plan, the design manual, proprietary soil absorption component specifications, or alternative aggregate product specifications shall accompany the plan. Inclusion of referenced resources does not substitute for critical information or calculations required for board of health approval of a design or layout plan.

(G) Installation shall be conducted by a registered installer in a manner consistent with an approved plan to assure proper operation and future servicing or monitoring of the soil absorption component.

- (1) Soil moisture conditions shall be evaluated at the time of installation, and the excavation or preparation of the soil infiltration interface, such as a trench or basal area, shall not proceed when there is a risk of smearing or compaction as evidenced by a deformability test, commonly referred to as ribboning, or other means established by the board of health.

- (2) Proprietary soil absorption components or alternative aggregate product specified in an approved design plan or layout plan shall be installed in accordance with the manufacturer's installation instructions or product specifications provided these do not conflict with this chapter.
 - (3) Testing of any pressure distribution components shall be conducted prior to installation approval by the board of health. Flow rate and distal pressure or operating head shall meet specifications and a baseline shall be recorded for future performance monitoring.
 - (4) Baseline records and any soil absorption component O&M instructions shall be provided by the installer to both the owner and the board of health as a condition of installation approval.
- (H) HSTS soil absorption components shall be operated, maintained, and monitored as required by the operation permit issued by the board of health to assure compliance with the requirements of this chapter. A registered service provider offering a service contract for an HSTS that includes a soil absorption component along with the component or components targeted for service, shall also service and/or monitor the soil absorption component.

Loading rate estimates are provided in Table 1 of the following published documents available through the Small Scale Waste Management Project (SSWMP) at University of Wisconsin, Madison:

Hydraulic Wastewater Loading Rates to Soil. E. J. Tyler. 2001. Proceedings of the 9th International Symposium on Individual and Small Community Sewage Systems. ASAE. Saint Joseph, MI. P.80-86. http://www.wisc.edu/sswmp/SSWMP_4.43.pdf

Designing with Soil: Development and Use of a Wastewater Hydraulic Linear and Infiltration Loading rate Table. E. Jerry Tyler and Laura Kramer Kuns. 2000. Conference Proceedings. NOWRA. Grand Rapids, MI. http://www.wisc.edu/sswmp/SSWMP_4.42.pdf

The selection of a soil loading rate or basal loading rate (referred to as infiltration loading rate in Table 1) and a linear loading rate (referred to as hydraulic linear loading rate in Table 1) shall be justified in an HSTS layout plan or an HSTS design plan. The following shall be considered when utilizing the values provided in the references cited in this appendix:

1. Table 1 values assume a higher daily design flow than that established in this chapter. Daily design flows generally include a margin of safety and usually are specified as peak flows. Selected loading rate values may differ depending on the incorporation of other safety factors. Some designs may include a means to attenuate peak flows and limit the actual daily flow to a volume significantly less than the peak daily design flow.
2. Table 1 values are estimates. Many factors should be considered when selecting loading rates, starting with close attention to the information from the site and soil evaluation for the specific site selected for the soil absorption component. Other factors include but are not limited to the type of soil absorption component and its configuration and landscape position.
3. Some of the spaces in Table 1 have values of 0.0 for the infiltrative loading rate or are blank for hydraulic loading rate values. Table 1 also does not account for depths of less than eight inches to a limiting condition. This indicates that the site conditions that relate to these circumstances could be unsuitable or very challenging for HSTS performance. Very conservative loading rates should be selected for such site conditions when an HSTS is not otherwise prohibited by this chapter.

29-13.1 Leaching trench requirements.

This rule provides siting conditions for gravity fed leaching trench soil absorption components with either parallel or serial distribution. If preparing a leaching trench HSTS layout plan for an owner, a registered installer must meet the requirements in this rule. Alternative Leaching Trenches, which may include shallow trench designs, distribution options and trench lengths exceeding 150 feet, etc. have been approved for installation in Ohio under Special Device Approval granted on August 28, 2007, by the Director of Health. Please refer to Appendix 29-13.1 for specifics in installing alternate leaching trench designs. A layout plan would accompany the site review application for a site that has been evaluated and determined to have adequate area and suitable soils to accommodate leaching trenches.

(A) Leaching trench soil absorption components are subject to this chapter including the following conditions: a septic tank or pretreatment component in compliance with this chapter and the provision in paragraph (E)(1) of rule 29-13 of this Chapter.

(1) Site modification and siting limitations for leaching trench soil absorption components include but are not limited to the following:

(a) A leaching trench soil absorption component shall be sited to avoid natural drainage features and depressions that may hold surface water. The plan for a leaching trench HSTS shall address surface water diversion as needed. An interceptor drain in compliance with paragraph (D) of rule 29-14 of this Chapter may be used upslope of a leaching trench soil absorption component.

(b) A leaching trench shall not be sited on slopes greater than fifteen percent.

(c) Sites with large trees or numerous smaller trees are less desirable for leaching trenches and such conditions shall be avoided or shall be identified and addressed in the HSTS plan.

(B) A registered installer providing a layout plan for a leaching trench HSTS shall comply with paragraph (A) of rule 29-09.1 of this Chapter and this paragraph. While a design plan prepared in accordance with paragraph (B) of rule 29-09.1 of this Chapter may vary from the requirements of this paragraph, a leaching trench soil absorption component layout plan prepared by a registered installer shall comply with the following:

(1) The soil loading rate and linear loading rate shall be determined from the site and soil evaluation information required in rule 29-08 of this Chapter. For the purpose of sizing, the soil loading rate shall apply to the trench length and the trench width specified for the leaching trench material or component. The trench shall have a minimum width of eight inches and shall not exceed two feet in width. The depth shall be a minimum of eighteen inches but not more than thirty inches. Shallow leach lines shall have a minimum depth of twelve inches. The linear loading rate shall be used to establish the minimum total length of the soil absorption area required parallel to the natural surface contours. This minimum length and

the specified trench width shall be used to determine the number of leaching trenches needed to accommodate the daily design flow. A leaching line shall have a maximum length of one hundred fifty feet. The minimum total length of the leach field shall be doubled and a diversion device shall be utilized for the purpose of providing capacity for resting a portion of the absorption area.

- (2) A pipe and gravel leaching trench shall have a minimum of twelve inches of gravel extending two inches above and six inches below a four inch perforated pipe. Gravel shall be washed or thoroughly rinsed to avoid the accumulation of fines in the trench and shall meet an AASHTO M 43 sizing for coarse aggregate with at least seventy per cent by weight in the range of three-fourth to one and one-half inch. Use of other leaching trench material such as alternative aggregate or proprietary gravelless and chamber - components shall be specified in accordance with paragraph (G)(6) of rule 29-13 of this Chapter.
- (3) A leaching trench bottom shall be level along its length and shall follow the natural surface contour maintaining the specified trench depth from the natural surface of the ground along the entire trench length. The grade shall not exceed a fall of one inch in fifty feet.
- (4) The minimum center to center distance between two trenches shall be six feet. This distance shall be increased on wooded sites and sites with slope or irregular contours as necessary to avoid trees and to accommodate variations in the surface contour. The minimum distance between any leaching line and interceptor drain shall be eight feet.
- (5) The means of flow distribution and management in accordance with paragraph (G) of rule 29-13 of this Chapter and this rule shall include:
 - (a) Specification of either parallel or serial distribution with components to be used having access to grade and a mechanism for flow diversion.
 - (b) Distribution component connections between the tank or another distribution component and to a leaching trench shall be watertight and shall include properly supported rigid solid wall pipe to prevent settling and damage under normal loads and operating conditions.
- (6) Geo-textile fabric or straw covering for aggregate trenches or other barrier as specified for proprietary components shall be used to prevent introduction of soil fines and allow for free movement of air and water.
- (7) The soil cover shall have a depth of at least six inches after settling or as specified for a proprietary product and shall be of a quality to allow for oxygen transfer and growth of vegetation.

- (C) In addition to the applicable installation requirements of paragraph (H) of rule 29-13 of this Chapter and the as-built record required in paragraph (C) of rule 29-09.1 of this Chapter a leaching trench installation shall comply with the following requirements:
- (1) The full soil absorption area shall be free of any site disturbance. If any disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner and the board of health.
 - (2) Prior to excavation the registered installer shall check all elevations in the layout plan relative to the established benchmark including the surface contour and proposed bottom elevation of each trench and the flow line elevation of other HSTS components to assure proper flow through the system.
 - (3) When soil conditions are suitable, leaching trenches shall be installed to meet all of the specifications and requirements of this chapter. The as-built record shall provide sufficient documentation of excavated trench bottom and natural surface grade elevations to prove compliance. Leaching trench material shall be placed in a manner that prevents compaction of the infiltrative surface. Open trenches shall be avoided for any length of time to prevent impacts from sediments in runoff and windblown silt.
 - (4) Suitable backfill and cover material as required in this rule or proprietary component specifications shall not be compacted and shall allow for settling unless otherwise specified by the proprietary product installation instructions. The completed HSTS area shall be protected from erosion through surface water diversion and provision of suitable vegetative cover, mulching, or other specified means of protection. The land surface shall be graded so as to exclude surface drainage from the HSTS.
- (D) In conjunction with any operation permit conditions or O&M management provisions required in this chapter or by the board of health, the O&M of a leaching trench HSTS shall include but is not limited to monitoring the liquid level or capacity of the leaching trench soil absorption component, management of flow diversion mechanisms for the purpose of resting portions of the soil absorption area, and checking for surface water infiltration or clear water flows from the dwelling or structures into the HSTS or onto the soil absorption area.

**Ohio Department of Health
Special Device Approval per OAC 3701-29-20(C)
Alternative Leaching Trenches**

In accordance with Am. Sub. HB 119 (127th General Assembly), effective July 2, 2007, the Ohio Department of Health (ODH) adopted Statewide Interim Sewage Rules that reflect the language in the 1977 version of Ohio Administrative Code (OAC) Chapter 3701-29. Due to this action and the rescinding of the 2007 sewage treatment system rules, the rule provisions for shallow leaching trenches were eliminated. Provisions in OAC Rule 3701-29-20(C) do provide the means for securing continued use of alternative trench design, dosing and distribution methods, as well as other advanced treatment systems. The rule reads as follows:

Household sewage disposal system components or household sewage disposal systems differing in design or principle of operation from those set for the in rules 3701-29-01 to 3701-29-21, may qualify for approval as a special device or system; provided, comprehensive tests and investigations show any such component or system produces results equivalent to those obtained by sewage disposal components or systems complying with such regulations. Such approval shall be obtained in writing from the director of health.

Am. Sub. HB 119 amendments to Ohio Revised Code Chapter 3718 still include the Technical Advisory Committee (TAC) process of reviewing systems and components that differ in design and function from those in rule. With consideration of TAC recommendations, ODH grants special device approval for alternative leaching trenches that may include shallow trench designs, distribution options, and trench lengths exceeding 150 feet in accordance with the conditions, specifications, and other provisions set forth in this document. **This special device approval is intended as a supplement to OAC Rule 3701-29-11 and grants local boards of health the authority to use alternative leaching trench options.**

CONDITIONS

The following conditions, as applicable, shall be met to comply with this approval:

1. The vertical separation distance (VSD) from the infiltrative surface of the leach trench to limiting condition, when applying septic tank effluent, may be 3 feet to rock strata and shall comply with VSD established locally for water tables and other limiting conditions.
2. Maintain at least one foot of in situ soil above any limiting condition except where permitted locally to be less than one foot to a perched seasonal high water table.
3. Soil depth credits may be used as specified for approved pretreatment components and other special device approvals posted on the ODH web site.
4. A sizing reduction of the soil absorption area is permitted when utilizing approved pretreatment components listed on the ODH web site for reduced BOD₅/TSS. The reduced absorption area should not exceed a 1/3 reduction of the area required for application of septic tank effluent and may be based on the infiltration loading rates from the Tyler Table referenced herein.

SPECIFICATIONS

1. **Site Limitations and Modifications** - Siting limitations and site modification include but are not limited to the following:
 - a. Trenches shall be oriented parallel to natural surface contours and shall be sited to avoid natural drainage features and depressions that may hold surface water. A variation of plus or minus 3 inches along the surface contour may be permissible to accommodate trench installation along the contour.
 - b. Plans shall address surface water diversion as needed. An interceptor drain may be used upslope of the leaching trench soil absorption component to intercept the horizontal flow of subsurface water to reduce its impact on the down gradient leaching trenches.
 - c. Leach trenches may be installed on a slope greater than 15% with special safety consideration and installation criteria as needed.
 - d. Site modification involving fill material shall comply with the following:
 - i. Unless evaluated as suitable, no fill material shall be present in the vertical separation distance below the infiltrative surface of the leaching trenches. Careful consideration shall be given prior to siting leach trenches in settled non-compacted fill material to determine its suitability for soil absorption. Over time, fill material *may* develop the characteristics of soil, however, it shall be thoroughly evaluated for such characteristics, in addition to treatment and dispersal capacities.
 - ii. Fill material applied to the natural ground surface prior to the excavation of shallow in situ soil leaching trenches shall be a sand, loamy sand, or sandy loam texture soil capable of maintaining trench sidewall stability during installation and shall be applied in a manner that both protects and creates an interface with the underlying in situ soil.
2. **Site and Soil Information** - A site and soil evaluation is required to identify depth to limiting conditions including but not limited to water table and rock strata, and a description of soils including texture, consistence, structure (both shape and grade).
3. **Design Criteria**
 - a. **Sizing and configuration** – The soil absorption component **area** shall be of adequate size and configuration to disperse the effluent and prevent surface seepage. For the purpose of sizing, soil loading rates and linear loading rates shall be considered. Resources for estimating loading rates may include the Tyler Table (table available in papers referenced herein) or other resources. Systems shall be sized based on at least 120 GPD per bedroom or as otherwise justified for daily peak flow variations or for SFOSTS flows per OAC Rule 3701-29-21.

The daily design flow and linear loading rate will establish the minimum **length** of the trenches along each contour. Leach trench lengths exceeding 150 feet, as a result of loading rate calculations, are permissible and placing the manifold in center of longer trenches may be considered. The trench shall have a maximum **width** of 3 feet. The minimum length and the specified trench width shall be used to determine the number of leaching trenches needed to accommodate the daily design flow.

Trench **depth** shall be determined by the limiting condition and have a minimum depth of two inches into the in situ soil. A leaching trench bottom shall be level along its length and shall follow the natural surface contour maintaining the specified trench depth from the natural surface of the ground along the entire trench length.

- b. **Trench materials** –Trenches shall have a minimum height of 8 inches of coarse aggregate or alternative aggregate. Gravelless and chamber products shall provide a minimum 8-inch height. Gravel or stone shall be washed with not more than 5% passing the No. 200 (75 µm) sieve as determined by ASTM C117, “Test Method for Material Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing” **and** shall be durable with a hardness of 3 or greater on the Moh’s Scale of Hardness. Gravelless and chamber products shall be used in accordance with manufacturer specifications for installation.
- c. **Cover** – The soil cover shall have a depth of at least six inches after settling or as specified for a proprietary product and shall be of a quality to allow for oxygen transfer and growth of vegetation.
- d. **Distribution options** – This special device approval allows for alternative dosing and distribution methods when gravity flow is not possible or preferred. Plans shall specify the means of distribution and management requirements including but not limited to the following:
 - i. Specification of either parallel or serial distribution with components to be used having access to grade and a mechanism for flow diversion and resting portions of the leaching system.
 - ii. Distribution component connections between the tank or another distribution component, and to a leaching trench, shall be watertight and shall include properly supported rigid solid wall pipe to prevent settling and damage under normal loads and operating conditions.
 - iii. A means for determining the liquid level or capacity of a leaching trench shall be provided. If an inspection port is used or required by the board of health, the port shall be anchored and accessible with at least a four inch opening and a removable watertight cap.
 - iv. References or specifications for dosing or distribution methods such as lift tanks, flood dosing, surge capacity for timed dosing, or low pressure pipe (LPP) distribution.

INSTALLATION

If any disturbance or damage has occurred to the soil absorption area, installation shall not proceed and the registered installer shall contact the owner and the board of health. Soil moisture conditions shall be evaluated and trench excavation postponed when there is risk of compaction or smearing sidewalls. Leaching trench material shall be placed in a manner that prevents compaction of the infiltrative surface. Open trenches shall be avoided for any length of time to prevent impacts from sediments in runoff and windblown silt. Suitable backfill and cover material as required in this document or proprietary component specifications shall be used. Such material shall not be compacted and shall allow for settling unless otherwise specified by the proprietary product installation instructions. The area over the leaching trenches shall be protected from erosion with provision of suitable vegetative cover, mulching, or other specified means of protection.

OPERATION & MAINTENANCE (O&M)

An alternative leaching trench system shall be operated, maintained, and monitored as required by the operation permit issued by the board of health. In conjunction with any operation permit conditions or O&M provisions required by the board of health, the O&M of a shallow trench soil absorption system may include but is not limited to:

1. Monitoring the liquid level or capacity of the leaching trench soil absorption component.
2. Management of flow diversion mechanisms for the purpose of resting portions of the soil absorption area.
3. Checking for surface water infiltration or clear water flows from the dwelling or structures into the system or onto the soil absorption area.
4. Monitoring for proper operation of mechanical components and/or distribution methods as applicable.

REFERENCES / RESOURCES

The Tyler Table is provided in the following published papers available through the Small Scale Waste Management Project (SSWMP) at University of Wisconsin, Madison. The papers provide a detailed explanation of the development and use of this loading rate table in Ohio.

Hydraulic Wastewater Loading Rates to Soil. E. J. Tyler. 2001. Proceedings of the 9th International Symposium on Individual and Small Community Sewage Systems. ASAE. Saint Joseph, MI. P.80-86.

http://www.soils.wisc.edu/sswmp/SSWMP_4.43.pdf

Designing with Soil: Development and Use of a Wastewater Hydraulic Linear and Infiltration Loading rate Table. E. Jerry Tyler and Laura Kramer Kuns. 2000. Conference Proceedings. NOWRA. Grand Rapids, MI.

http://www.soils.wisc.edu/sswmp/SSWMP_4.42.pdf

29-13.2 Mound with pressure distribution requirements.

This rule provides siting conditions for a septic tank/mound soil absorption system and includes requirements for the pressure distribution network. If preparing an HSTS mound layout plan for an owner, a registered installer must meet the requirements in this rule. A layout plan would accompany the site review application for a site that has been evaluated and determined to have adequate area, suitable soils, and at least six inches of vertical separation to any limiting condition. On July 31, 2007, the Director of Health, of the Ohio Department of Health, granted Special Device Approval for Sand Mounds with Pressure Distribution. Refer to Appendix 29-13.2 for further specifications and requirements for the installation of mound systems.

(A) Mound soil absorption components are subject to this chapter including the following conditions:

(1) Paragraph (B) of this rule shall only apply to a mound soil absorption system having septic tank effluent dosed to a pressure distribution network in compliance with this chapter and the elevation soil depth credit provision in paragraph (C)(1) of rule 29-13 of this Chapter.

(2) Site modification and siting limitations include but are not limited to the following:

(a) An interceptor drain in compliance with paragraph (D) of rule 29-14 of this Chapter must be used upslope of a mound soil absorption component. Gradient drains shall not be used with mound soil absorption components addressed in this rule. The mound component shall be sited to avoid natural drainage features and depressions that may hold surface water. A plan for a mound soil absorption component shall address surface water diversion as needed.

(b) A mound soil absorption component shall not be sited on a slope greater than fifteen percent unless the HSTS plan includes special installation criteria.

(c) Sites with boulders or numerous trees are less desirable for a mound soil absorption component. Such conditions shall be avoided or the HSTS plan shall increase the basal area to compensate for losses due to boulders or flush cut trees and shall include special instructions for the basal area preparation under such conditions.

(B) A registered installer providing a layout plan for an HSTS mound shall comply with paragraph (A) of rule 29-09.1 of this Chapter and this paragraph. While a design plan prepared in accordance with paragraph (B) of rule 29-09.1 of this Chapter may vary from the requirements of this paragraph, a layout plan prepared by a registered installer shall comply with the following requirements:

- (1) For the purpose of sizing, the soil loading rate and linear loading rate shall be determined from the site and soil evaluation information required in rule 29-08 of this Chapter. Conservative loading rate values shall be selected on sites having depths between one-half foot to two feet from the surface of the ground to limiting conditions. When the daily average flow from a dwelling is expected to exceed sixty percent of a peak daily design flow of one hundred twenty gallons per day per bedroom, the peak daily design flow shall be increased accordingly. The peak daily design flow and the linear loading rate shall establish the minimum continuous length of the mound soil absorption area parallel to the natural surface contour. For the purposes of paragraph (B) of this rule, a mound may not be split or sited at different contour elevations.
- (2) The mound sand fill depth shall be determined based on the depth to the limiting conditions and the sand fill depth shall not exceed two (2) feet other than for a slope adjustment. The loading rate for the sand fill material shall not exceed 1.0 gpd/ft². Concrete sand meeting ASTM C 33 for fine aggregate may be used provided the material meets the following specifications:
 - (a) An effective size in the range of 0.15 to 0.30 mm;
 - (b) A uniformity coefficient in the range of four to six;
 - (c) No more than twenty per cent by weight is gravel greater than two mm;
and
 - (d) No more than five per cent by weight is silt and clay less than 0.053 mm.
- (3) The layout plan shall include the calculations used for determining the distribution area width and length and the basal area width and length including any variation due to slope and the subsequent increase in sand fill depth. The layout plan may include references to mound resource manuals.
- (4) The depth of the distribution area shall be at least nine inches with a minimum of six inches of durable aggregate beneath the distribution pipe and at least one inch of aggregate over the pipe. Washed or thoroughly rinsed gravel meeting an AASHTO M 43 sizing for coarse aggregate with at least seventy percent by weight in the range of three-fourth to one and one-half inch shall be used for the distribution area unless the layout plans specify the use of other material such as alternative aggregate or proprietary components in accordance with paragraph (G)(6) of rule 29-13 of this Chapter.
- (5) The means of pressure distribution and management shall be in accordance with paragraph (G) of rule 29-13 of this Chapter and the following:
 - (a) Distribution component connections shall be watertight and shall include properly supported rigid solid wall pipe to prevent settling and damage under normal loads and operating conditions.
 - (b) The layout plan shall include the entire network configuration including pipe lengths and sizes for the force main, any force main branches,

manifolds, and laterals with orifice size, spacing and shielding and also the calculations used to determine dose volume and pump selection within the following specification:

- (i) Each dose shall deliver to the distribution area no greater than one fourth of the daily design flow and at least five times the void volume of the laterals.
 - (ii) The orifice number and spacing shall provide distribution of no more than six square feet per orifice with an orifice size of not less than three-sixteenth inch. The method of orifice shielding shall be specified in the plan.
 - (iii) The selected distal pressure head to be maintained at the end of each lateral shall be between two to five feet using a higher pressure head when selecting smaller orifice sizes.
- (c) The dosing tank size and the pump, control, and alarm specifications shall be included with the layout plan and the plan shall indicate the float switch settings used to accommodate the dose volume including any drainback to the dosing tank. The dosing tank size shall be of sufficient size to accommodate surge storage necessary for the proposed system design.
- (d) The following shall be provided for O&M and monitoring:
- (i) At least three inspection ports shall be spaced at intervals adequate for observation of distribution and any ponding at the sand fill surface. The ports shall be anchored and be accessible with at least a four inch opening and a removable watertight cap.
 - (ii) An access port shall be provided for the required shutoff mechanism to portions of the distribution network.
 - (iii) Accessible turn-ups shall be provided at the end of each lateral for the purpose of flushing the laterals and testing distal pressure head.
- (6) A geotextile fabric or straw covering of the aggregate in the distribution area or other barrier as specified for proprietary components shall be used to prevent introduction of soil fines and allow for free movement of air and water.
- (7) The soil cover shall be at least six inches over the entire mound and the mound shall be crowned to promote runoff. Soil cover shall be of a quality to allow for oxygen transfer and growth of vegetation and to add frost protection.
- (C) In addition to the applicable installation requirements of paragraph (H) of rule 29-13 of this Chapter and the as-built record required in paragraph (C) of rule 29-09.1 of this Chapter, a mound soil absorption component installation shall comply with the following requirements:

- (1) The full soil absorption area shall be free of any site disturbance. If any disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner and the board of health.
- (2) Prior to excavation the registered installer shall check all elevations in the layout plan relative to the established benchmark including the surface contour and the flow line elevation of other HSTS components to assure proper flow through the system.
- (3) When site conditions are suitable, the mound soil absorption component shall be installed to meet all of the specifications and requirements of this chapter. The as-built record shall provide sufficient documentation of installed components and natural surface grade elevations to prove compliance.
- (4) The mound shall be installed according to the layout plan and any referenced resource and shall comply with the following:
 - (a) All vegetation shall be cut close to the ground and removed from the site. Stumps, roots, sod, topsoil, and boulders shall not be removed. The force main should be installed from the upslope side. All vehicle traffic on the basal area and downslope area of the mound should be avoided with installation work being conducted from the upslope side or end of the mound basal area.
 - (b) The basal area of the mound shall be prepared to provide a sand/soil interface and to improve infiltration if needed. The basal area preparation shall not damage the structure of the soil infiltrative surface. Any basal scarification or other basal area preparation shall be conducted working along the contour. An inspection of the basal area is required by the board of health prior to placement of sand fill. Sand may be incorporated into the basal area during the preparation process. Following basal preparation, a layer of sand fill shall be placed on the entire basal area to prevent damage from precipitation and foot traffic.
 - (c) The specified depth and sufficient amount of sand fill shall be placed to cover the basal area, form the absorption area, and shall not exceed 3:1 side slopes. The distribution area shall be formed to the specified dimensions and the sand surface of the distribution area shall be level.
 - (d) Construct and install all components of the distribution network and observation ports.
 - (e) Cover the distribution area with straw, geotextile fabric, or other product as applicable and place the required soil cover over the mound.
- (5) The completed HSTS area shall be protected from erosion through surface water diversion and provision of suitable vegetative cover, mulching, or other specified means of protection.
- (6) The as-built record shall include the observed height of the distal pressure head and float switch settings as baseline measures for future O&M and monitoring.

- (D) In conjunction with any operation permit conditions or O&M management provisions required in this chapter or by the board of health, the O&M of a mound soil absorption system shall include but is not limited to checking the mound vegetative cover for erosion or settling and any evidence of seepage on the sides or toes of the mound, flushing of distribution laterals, checking for ponding in the distribution area, monitoring the dose volume and distal pressure head of the distribution system, and checking for any surface water infiltration or clear water flows from the dwelling or structures into HSTS components or around the mound soil absorption area.

**Ohio Department of Health
Special Device Approval per OAC 3701-29-20(C)
Sand Mounds with Pressure Distribution**

In accordance with Am. Sub. HB 119 (127th General Assembly), effective July 2, 2007, the Ohio Department of Health (ODH) adopted Statewide Interim Sewage Rules that reflect the language in the 1977 version of Ohio Administrative Code (OAC) Chapter 3701-29. Due to this action and the rescinding of the 2007 sewage treatment system rules, the rule provisions for mound systems were eliminated. Provisions in OAC Rule 3701-29-20(C) do provide the means for securing continued use of mound systems as well as other advanced treatment systems. The rule reads as follows:

Household sewage disposal system components or household sewage disposal systems differing in design or principle of operation from those set for the in rules 3701-29-01 to 3701-29-21, may qualify for approval as a special device or system; provided, comprehensive tests and investigations show any such component or system produces results equivalent to those obtained by sewage disposal components or systems complying with such regulations. Such approval shall be obtained in writing from the director of health.

Am. Sub. HB 119 amendments to Ohio Revised Code Chapter 3718 still include the Technical Advisory Committee (TAC) process of reviewing systems and components that differ in design and function from those in rule. With consideration of TAC recommendations, ODH grants special device approval for the statewide use of sand mounds with pressure distribution in accordance with the conditions, specifications, and other provisions set forth in this document.

CONDITIONS

The following conditions, as applicable, shall be met to comply with this approval:

1. Maintain at least one foot of in situ soil below the sand fill and above any limiting condition except for perched seasonal high water tables. If permitted locally to be less than one foot to a perched seasonal high water table, consideration should be given to timed dosing with smaller dose volumes.
2. Vertical separation distance (VSD) from the top of the sand fill to the limiting condition(s):
 - a. When applying septic tank effluent, VSD shall not be less than 3 feet to rock strata or soils with greater than 50% fragments, and not less than 2 feet to all other limiting conditions
 - b. When applying pretreated effluent for pathogen reduction, can use soil depth credits as specified for approved pretreatment components on the ODH web site.

SPECIFICATIONS

1. **Site Limitations and Modifications** - Siting limitations and site modification include but are not limited to the following:

- a. Mounds shall be oriented parallel to natural surface contours and shall be sited to avoid natural drainage features and depressions that may hold surface water. A design plan for a mound shall address surface water diversion as needed.
- b. An interceptor drain may be used upslope of a mound soil absorption component to intercept the horizontal flow of subsurface water to reduce its impact on the down gradient mound component.
- c. A mound soil absorption component shall not be sited on a slope greater than fifteen percent unless the design plan includes special installation criteria.
- d. Sites with boulders or numerous trees are less desirable for a mound soil absorption component. Such conditions shall be avoided or the design plan shall increase the basal area to compensate for losses due to boulders or flush cut trees and shall include special instructions for the basal area preparation under such conditions.

2. **Site and Soil Information**

- a. Site information shall include a description of landscape position, slope, vegetation, drainage features, rock outcrops, erosion and other natural features; and documentation of any relevant surface hydrology, geologic and hydrogeologic risk factors for the specific site or in the surrounding area that may indicate vulnerability for surface water and ground water contamination.
- b. Soil Information shall include identification of depth to limiting conditions including but not limited to water table and rock strata, and a description of soil texture, consistence, and structure, including shape and grade.

3. **Design Criteria**

- a. **Sizing** - For the purpose of sizing, the soil loading rate and linear loading rate shall be determined from site and soil evaluation information. The most limiting in situ soil layer within the VSD shall be used to determine the soil loading rate. Resources for estimating loading rates may include the Tyler Table (table available in papers referenced herein) or other referenced resources. A basal area sizing reduction (i.e. higher soil loading rate) shall be based on the Tyler Table or other referenced resource when using at least one foot of sand fill or when using ODH approved pretreatment components meeting BOD₅ of less than 30 mg/L.

Systems shall be sized based on 120 GPD per bedroom or as otherwise justified for daily peak flow variations or for SFOSTS flows per OAC Rule 3701-29-21. When the daily average flow from a dwelling is expected to

exceed sixty percent of a peak daily design flow of 120 GPD per bedroom, the peak daily design flow shall be increased accordingly. Time dosing may be used to avoid exceeding the daily design flow. The peak daily design flow and the linear loading rate shall establish the minimum continuous length of the mound soil absorption area parallel to the natural surface contour.

- b. **Sand Fill** - The mound sand fill depth shall be determined based on the depth to the limiting conditions. The sand fill depth shall not exceed two feet and shall not be less than four inches. The loading rate for the sand fill material shall not exceed 1.0 gpd/ft^2 . For the purpose of this document, **natural sand** is defined as naturally deposited silica based sand not manufactured by mechanical processing such as the crushing of rock or coarse aggregates. The mound sand fill shall be a natural sand meeting **one** the following:
 - i. Referenced specifications in Wisconsin Mound Soil Absorption System: siting, design and construction manual (Converse & Tyler, 2000) recognizing it is best to stay on the coarse side with effective size (D10) close to 0.30 mm and uniformity coefficient (D60/D10) of 4.0 (as stated in the referenced resource on page 13).
 - ii. Concrete sand meeting the gradation requirements of ASTM C33 provided not more than 5% passes the No. 200 (75 μm) sieve as determined by ASTM C117, "Test Method for Material Finer than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing". In order to allow for greater void space and water movement, and to help deter premature clogging, **it is best to err on the coarse side of the ASTM C33 standard** with a recommended effective size close to 0.30 mm and a uniformity coefficient close to 4.0.
 - iii. Having an effective size between 0.20 to 0.35 mm, a uniformity coefficient of 5.0 or less with not more than 5% passing the No. 200 (75 μm) sieve as determined by ASTM C117, "Test Method for Material Finer than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing" and not less than 80% passing the No. 8 (2.36mm) sieve.
- c. **Distribution Area over Sand Fill** - The design plan shall specify the depth of the distribution area. If using coarse aggregate, it shall be washed with not more than 5% passing the No. 200 (75 μm) sieve as determined by ASTM C117, "Test Method for Material Finer than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing" and shall be durable with a hardness of 3 or greater on the Moh's Scale of Hardness. Plans may specify the use of other distribution area products or material such as gravelless and chamber products.
- d. **Pressure distribution network** - Distribution network connections shall be watertight and shall include properly supported rigid solid wall pipe to prevent settling and damage under normal loads and operating conditions. The design plan shall include the entire network configuration including pipe lengths and sizes for the force main, any force main branches,

manifolds, and laterals with orifice size, spacing and shielding and also the calculations used to determine dose volume and pump selection within the following specification:

- i. There shall be no more than a ten percent difference in flow rate between the proximal and distal orifices on each distribution lateral.
- ii. Each dose shall deliver to the distribution area no greater than one fourth of the daily design flow and at least five times the void volume of the laterals.
- iii. The orifice number and spacing shall provide distribution of no more than six square feet per orifice with an orifice size of not less than one-eighth inch. The direction of orifices and the method of orifice shielding shall be specified in the plan.
- iv. The selected distal pressure head to be maintained at the end of each lateral shall be between two to five feet using a higher pressure head when selecting smaller orifice sizes.

The dosing tank size and the pump, **exterior** control panel, and alarm information shall be included with the design plan and the plan shall indicate the settings or means used to accommodate the dose volume including any drain-back to the dosing tank.

- e. **O&M and monitoring components** - At least three inspection ports shall be spaced at intervals adequate for observation of distribution and any ponding at the sand fill surface. The ports shall be anchored and be accessible with at least a four inch opening and a removable watertight cap. Accessible turn-ups shall be provided at the end of each lateral for the purpose of flushing the laterals and testing distal operating head.
- f. **Mound cover** - A geotextile fabric or straw covering of the aggregate in the distribution area or other barrier as specified for proprietary components shall be used to prevent introduction of soil fines and allow for free movement of air and water. The soil cover shall be applied to allow for an approximate depth of six inches after settling, and the mound shall be crowned to promote runoff. Soil cover shall be of a quality to allow for oxygen transfer and growth of vegetation.

INSTALLATION

1. **Pre-Installation** - The full soil absorption area shall be free of any site disturbances. If any disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner and the board of health. Prior to installation the registered installer shall check all elevations in the design plan relative to the established benchmark including the surface contour and the flow line elevation of other components to assure proper flow through the system and freeze protection as applicable. Soil moisture conditions shall be evaluated and basal area preparation shall not proceed when there is risk of smearing or compaction.

2. **Site Preparation and Installation** - The mound shall be installed according to the design plan and any referenced resource and shall comply with the following:
- a. All vegetation shall be cut close to the ground and removed from the site. Stumps, roots, sod, topsoil, and boulders shall not be removed.
 - b. The force main should be installed from the upslope side. All vehicle traffic on the basal area and downslope area of the mound should be avoided with installation work being conducted from the upslope side or end of the mound basal area.
 - c. The basal area of the mound shall be prepared to provide a sand/soil interface and to improve infiltration if needed. The basal area preparation shall not reduce the infiltrative capacity of the soil surface. The degree of basal area preparation shall be determined on a site by site basis depending on soil conditions. Any basal scarification or other basal area preparation shall be conducted working along the contour. Sand may be incorporated into the basal area during the preparation process. Following basal preparation, a layer of sand fill shall be placed on the entire basal area to prevent damage from precipitation and foot traffic.
 - d. The specified depth and sufficient amount of sand fill shall be placed to cover the basal area, form the absorption area, and shall not be steeper than 3:1 side slopes. The distribution area shall be formed to the specified dimensions and the sand surface of the distribution area shall be level.
 - e. Construct and install all components of the distribution network and observation ports.
 - f. Cover the distribution area with straw, geotextile fabric, or other product as applicable and place the required soil cover over the mound.

3. Completion

- a. The area around the mound system shall be protected from erosion through upslope surface water diversion and provision of suitable vegetative cover, mulching, or other specified means of protection.
- b. Installer documentation shall include the measured height of the distal operating head, the system flow rate, and dose volume settings as baseline measures for future O&M and monitoring. Documentation shall be provided to the local health district to be included in the permit record.

OPERATION & MAINTENANCE (O&M)

The mound system shall be operated, maintained, and monitored as required by the operation permit issued by the board of health. A service agreement for a mound system with a pretreatment component shall also include the maintenance and monitoring of all system components.

In conjunction with any operation permit conditions or O&M provisions required by the board of health, the O&M of a mound soil absorption system shall include but is not limited to:

1. Checking the mound vegetative cover for erosion or settling and any evidence of seepage on the sides or toes of the mound.
2. Flushing of distribution laterals.
3. Checking for ponding in the distribution area.
4. Monitoring the dose volume and operating pressure head of the distribution system.
5. Checking for any surface water infiltration or clear water flows from the dwelling or structures into the system components or around the mound soil absorption area.

REFERENCES / RESOURCES

The following referenced resources may supplement the provisions of this approval for statewide use of sand mounds with pressure distribution. Any more stringent siting limitations or other provisions specified in a referenced resource shall be considered. Provisions in the referenced resources that are less stringent than those set forth in this document are not acceptable for use under this special device approval.

Tyler Table Resources – The Tyler Table is provided in the following published documents available through the Small Scale Waste Management Project (SSWMP) at University of Wisconsin, Madison. The papers provide a detailed explanation of the development and use of this loading rate table in Ohio.

Hydraulic Wastewater Loading Rates to Soil. E. J. Tyler. 2001. Proceedings of the 9th International Symposium on Individual and Small Community Sewage Systems. ASAE. Saint Joseph, MI. P.80-86.

http://www.soils.wisc.edu/sswmp/SSWMP_4.43.pdf

Designing with Soil: Development and Use of a Wastewater Hydraulic Linear and Infiltration Loading rate Table. E. Jerry Tyler and Laura Kramer Kuns. 2000. Conference Proceedings. NOWRA. Grand Rapids, MI.

http://www.soils.wisc.edu/sswmp/SSWMP_4.42.pdf

Mound Resources – Attention should be paid to the siting limitations specified in the following manuals.

Wisconsin Mound Soil Absorption System: siting, design and construction manual (Converse & Tyler, 2000)

http://www.soils.wisc.edu/sswmp/SSWMP_15.24.pdf

Pressure Distribution Network Design (Converse, 2000)

http://www.soils.wisc.edu/sswmp/SSWMP_9.14.pdf

Bulletin 813: Mound Systems for Onsite Wastewater Treatment - Siting, Design, and Construction in Ohio (Chen, C. and Mancl, K.; 2004)

<http://ohioline.osu.edu/b813/index.html>

Bulletin 829: Mound System - Pressure Distribution of Wastewater (Kang, Y.W., Mancl, K., and Gustafson, R.; 2005)

<http://ohioline.osu.edu/b829/index.html>

29-13.3 Drip distribution requirements.

Drip distribution systems must comply with the minimum siting, design, installation, and operation criteria set forth in this rule and 29-13 of this chapter. All drip distribution systems utilized for this rule must obtain Ohio Department of Health system assurance approval or Technical Advisory Committee Special Device approval.

This rule provides for the use of drip distribution as a component of an HSTS that is fully supported by a responsible party providing assurances of this support. The described assurance process is intended to promote coordination of the siting, design, installation, and O&M of a drip distribution HSTS. Drip distribution meeting these requirements allows for the use of a soil depth credit for additional treatment and dispersal benefits including increased retention time and oxygen transfer due to time controlled micro-dosed application to the biologically active upper horizon of the soil profile.

(A) The drip distribution requirements in this rule are subject to the following conditions:

- (1) Drip distribution components that are part of a fully supported HSTS in compliance with this rule shall be eligible for a soil depth credit in accordance with paragraph (C)(3) of rule 29-13 of this Chapter.
- (2) Any person intending to act as the responsible party providing a fully supported drip distribution HSTS shall submit written assurances of compliance with this rule to the department of health for approval. In addition to the written assurances, a submittal shall include sample plans, manuals for the drip distribution and other HSTS components as applicable, and any other information necessary to demonstrate compliance. The written assurances shall indicate how the responsible party shall comply with the following:
 - (a) Assure that the site and soil conditions and limitations reported for each site represent accurate information.
 - (b) Assure that design plans comply with this chapter and the additional requirements of this rule.
 - (c) Assure the provision of training to installers and oversight as necessary to assure proper installation.
 - (d) Assure that upon completion of an installation, a system start-up is conducted to establish baseline performance and compliance with design specifications.
 - (e) Assure that qualified and registered service providers are available to conduct O&M for the entire system through the service contract requirements of paragraph (C) of this rule. Forms, programs, or instructions supporting start-up procedures and O&M service and monitoring shall be provided with the written assurances.

- (3) The board of health may not issue a permit to install for a drip distribution HSTS until the written assurances required in this rule have been approved by the department of health. Following the initial department of health approval, the board of health shall notify the department of health when a responsible party does not comply with the assurance requirements in paragraphs (A)(2)(a) to (A)(2)(e) of this rule.
- (B) Referenced manuals and technical resources may be used for general design, but a drip distribution HSTS shall comply with this chapter and the following requirements:
- (1) Siting limitations and site modification shall include but are not limited to the following:
 - (a) The drip distribution component shall be sited to avoid natural drainage features and depressions. The design plan shall address surface water diversion as needed.
 - (b) An interceptor drain in compliance with paragraph (D) of rule 29-14 of this Chapter must be used upslope of the soil absorption component.
 - (c) Drip distribution shall not be sited on slopes greater than fifteen percent.
 - (2) Areas designated for installation and replacement shall be undisturbed and be protected from damage or disturbance. The design plan shall specify that any disturbance or damage may result in the invalidation of the design plan. If any disturbance or damage has occurred, installation shall not proceed and the registered installer shall contact the owner, the drip distribution responsible party, and the board of health. Installation of subsurface drip tubing or preparation of the soil infiltration interface for at-grade or elevated sand fill drip fields shall not proceed when there is a risk of smearing or compaction.
 - (3) The design plan shall indicate the vertical separation distance from the drip tubing to limiting conditions and justify the placement of the drip tubing at a specific subsurface depth not to exceed one foot, at-grade, or a specific sand fill elevation not to exceed one foot. When placement is at-grade or on sand fill, basal area preparation shall be specified in the design plan. Any sand fill shall meet the specifications in paragraph (C)(1) of rule 29-13 of this Chapter. Cover material and depth specifications including precautions for freeze protection of the entire distribution system shall be included in the design plan.
 - (4) The method and calculations for sizing the soil absorption area shall be included in the design plan with reference to any manufacturer, supplier, or designer specifications but shall not be less than that determined in accordance with the site and soil evaluation information required in rule 29-08 of this Chapter and soil loading rate estimates referenced in the appendix to this chapter.
 - (5) Only pressure compensating emitters shall be used for HSTS drip distribution. The design plan shall specify the flow rate of the emitters and approximate absorption area per emitter.

- (6) Drip distribution areas shall be sited, and the drip tubing installed, parallel to natural surface contours. The length of the distribution area along the contour shall be determined by the linear loading rate. When site conditions indicate shallow horizontal subsurface flow, an undisturbed on-lot area of up to twenty five feet shall be preserved below or around the drip distribution area and the designated replacement area.
- (7) Any selected pretreatment component shall conform to this chapter and the HSTS design specifications including additional capacity if needed to accommodate drip tubing and filter flushes. Use of pretreatment to justify reductions in either the soil absorption area or vertical separation distance shall be justified in the design plan and must be approved by the board of health.
- (8) Timed dosing shall be required and the combined surge and reserve capacity shall be a minimum of one and a half times the daily design flow with increased surge capacity as needed to reduce the incidence of high water alarms during peak flows. Dosing controls shall prevent flow to the drip distribution component in excess of the daily design flow. Controls shall provide a means to record alarm events, troubleshoot system malfunctions, and monitor flow over time and flow rates during both dosing and flushing events. Observation ports required in paragraph (G)(2) of rule 29-13 of this Chapter shall not be required.
- (9) The drip tubing shall be maintained through an automated scouring flush at a frequency adequate to prevent coating of the drip tubing and clogging of emitters. The frequency shall be specified in the design plan and shall not be less than twice a month per zone under normal operating conditions and shall be adjustable for actual operating conditions. Drip tubing flushes and filters flushes used to reduce solids going to emitters shall be returned to the influent end of the pretreatment component or septic tank. In the case where flush volumes may disrupt the process of a pretreatment component, added pretreatment component capacity shall be required.
- (10) For management purposes, at least two zones shall be included in the drip distribution design with an easily accessible shutoff mechanism for each zone. The timed micro-doses specified in paragraph (B)(8) of this rule and paragraph (C)(3) of rule 29-13 of this Chapter may be applied simultaneously or alternately to each zone. Air release valves shall be required at the highest elevation in each zone to vent the zone and prevent soil fines from entering the emitters during drain down after the pump shuts off.
- (11) Following installation and before HSTS approval by the board of health, the responsible party and/or the registered installer shall conduct a start-up procedure and document baseline measurements needed for future O&M and monitoring. Baseline measurements and monitoring information shall include but is not limited to dose rates and flushing flow rates for each zone and calculation of daily flow averages. As-built records including baseline measurements and O&M instructions shall be provided to the owner, service provider, and the board of health.

- (C) In conjunction with any other operation permit conditions or O&M management provisions required in this chapter or by the board of health, and as a condition of an operation permit for a drip distribution HSTS, the board of health shall require the owner of a drip distribution HSTS to maintain an O&M service contract. The O&M and monitoring of the entire HSTS shall be conducted at least annually, or more often as required by the responsible party or the manufacturer of any component of the drip distribution HSTS, and shall be conducted by the responsible party acting as a registered service provider or by a registered service provider who has been qualified by the responsible party.

29-14 **Site modification.**

The purpose of this rule is to address site modifications that may have already occurred on a site being considered for an HSTS and those site modifications that may be proposed to support HSTS installation or operation. This rule provides requirements and criteria related to fill material, surface water diversion, and existing and proposed subsurface drainage. While this rule allows the use of a diversion swale or interceptor drain as acceptable practice for use with any HSTS when needed, the rule does limit the use of a gradient drain or drainage system.

(A) Site modification involving fill material shall comply with the following:

- (1) Prior to consideration of siting a soil absorption component in settled non-compacted fill material that over time may have developed the characteristics of soil, the material shall be thoroughly evaluated as to its treatment and dispersal capacity in conjunction with the soil and site evaluation required in rule 29-08 of this Chapter.
- (2) No fill material shall be present in the vertical separation distance below the infiltrative surface of the distribution system, other than that found suitable under paragraph (A)(1) of this rule or sand fill material specified for a soil absorption component in compliance with paragraph (C)(1) of rule 29-13 of this Chapter.
- (3) Fill material applied to the natural ground surface prior to the excavation of shallow in situ soil leaching trenches shall be a sandy texture soil, sandy loam soil, or topsoil capable of maintaining trench sidewall stability during installation and shall be applied in a manner that both protects and creates an interface with the underlying in situ soil.

(B) When siting an HSTS, an existing drain tile, drainage system, or other artificial subsurface drainage shall be avoided whenever possible with at least ten feet of horizontal separation from any component of an HSTS. If necessary, an existing drainage tile may be abandoned and rerouted to maintain at least the ten feet of separation and the abandoned section of tile shall be plugged. If existing drainage tile cannot be avoided or abandoned and rerouted and will be present in the area of a soil absorption component, the top of the drainage tile shall be considered a limiting condition subject to the three foot vertical separation distance in paragraph (A) of rule 29-13 of this Chapter.

(C) When surface water runoff will infiltrate or cause ponding on or around HSTS components, diversion swales shall be designed to intercept and divert surface water with specifications indicated in the layout plan or design plan. HSTS components shall not be sited in depressions where surface water runoff cannot be properly managed through diversion. Diversion of surface water associated with an HSTS shall not negatively impact other property or stormwater management.

(D) Any artificial subsurface drain designed to influence a HSTS shall comply with the following as applicable:

- (1) An interceptor drain shall be sited upslope of an HSTS when horizontal subsurface flow of water would impact a down gradient soil absorption component. The specifications for the interceptor drain, including the upslope distance from HSTS components and the interceptor drain outlet and outfall in accordance with paragraph (D)(3) of this rule, shall be included in the layout plan or design plan.
- (2) An interceptor drain shall be constructed on the upslope side of the soil absorption areas of the HSTS and shall be a minimum of 12 inches deep and 12 inches wide. The drain shall utilize a perforated pipe with washed gravel $\frac{3}{4}$ to 1 $\frac{1}{2}$ inches diameter or a comparable gravelless product approved by the board of health.
- (3) A drain outlet shall comply with the following:
 - (a) The drain outlet, including rigid solid wall pipe and animal guard, shall be designed to allow for free flow from the invert of the pipe for the purpose of sampling.
 - (b) The invert of the pipe for a gravity flow outlet shall be at least four inches above whichever is closer of the receiving water level or ground surface.
 - (c) A drain shall achieve gravity flow at the outlet.
 - (c) The receiving area for a drain outlet shall not pond and shall allow free flow away from the outlet during both dry and wet weather conditions to an established drainage feature.
 - (d) Written permission shall be obtained for placement of a drain outlet within a right-of-way or legally established public drainage improvement. A drain outlet associated with an HSTS shall be subject to the easement provisions of paragraph (E)(4) of rule 29-07 of this Chapter.

29-15 **Privies and holding tanks.**

The purpose of this rule is to provide for the storage of household sewage under limited circumstances. The board of health determines the conditions and circumstances under which a privy or holding tank may be permitted. It is expected that the use of privies and holding tanks will be infrequent and that holding tanks would generally be used for temporary periods, such as when sanitary sewers would be accessible within a short timeframe or the installation of a soil absorption component is delayed due to site conditions.

- (A) A holding tank or privy vault shall only be installed by a registered installer when authorized by the board of health in compliance with this chapter.
- (B) A privy shall only be permitted and installed as an HSTS under the following limited conditions:
 - (1) All plumbing or drain connections to the privy vault are prohibited.
 - (2) The vault shall comply with the requirements of paragraph (A) of rule 29-11 of this Chapter and shall have a capacity of not less than five hundred gallons.
 - (3) The location of the vault shall comply with all isolation distance requirements set forth in paragraphs (E) and (F) of rule 29-07 of this Chapter.
 - (4) The superstructure shall be vented and minimize entry of insects or animals.
- (C) A holding tank shall only be permitted as an HSTS under the following limited conditions when a variance has been granted by the board of health in compliance with rule 29-18 of this Chapter.
 - (1) A holding tank shall comply with the requirements of paragraph (A) of rule 29-11 of this Chapter.
 - (2) A holding tank shall be located in compliance with paragraphs (E) and (F) of rule 29-07 of this Chapter and shall be easily accessible for frequent pumping.
 - (3) The size of the holding tank shall take into account the design flow criteria established under paragraph (A) of rule 29-10 of this Chapter. The board of health shall establish a required frequency of pumping for the tank as a condition of the variance. As an alternative to a scheduled pumping frequency, a high water alarm may be installed in compliance with paragraph (G)(4) of rule 29-11 of this Chapter.
- (D) The owner of a privy or holding tank shall have a registered septage hauler remove the contents of the vault or tank before the capacity is exceeded. As a condition of the operation permit required in paragraph (C) of rule 29-09 of this Chapter, the board of health shall require the contents of a privy or holding tank be removed in accordance with this rule and in compliance with any other operation permit or variance conditions established by the board of health.

29-16 **Education, inspection, compliance, and enforcement.**

This rule and its supplemental rules address the compliance and management responsibilities of the board of health and promote an approach that allows for flexibility. This approach encourages a comprehensive view of management where the board of health can support owner responsibility, HSTS professionals' accountability, and partnerships with other entities to expand the necessary oversight of decentralized wastewater infrastructure. For new and replacement HSTS, the governing statute provides the authority and direction to proactively address HSTS performance and public health protection. This can be achieved through education, outreach, and informing and holding accountable those responsible for code compliance rather than depending primarily on reactive enforcement and public health nuisance abatement.

- (A) The board of health shall promote compliance with this chapter through educational outreach including but not limited to the following:
 - (1) Proactively provide information to owners and other parties on applicable areas of responsibility for compliance with this chapter.
 - (2) Provide O&M instructions to the HSTS owner in conjunction with the board of health operational inspection required in paragraph (C)(3) of rule 29-09 of this Chapter.
 - (3) Provide referrals to department of health and manufacturer internet sites for O&M instructions that are required by law to be posted, or upon request, directly provide a copy of these O&M instructions.

- (B) The board of health shall provide the oversight necessary to determine compliance with this chapter. The board of health may at any reasonable time inspect any HSTS or part thereof, conduct sampling, collect data, inspect a proposed HSTS site, or perform other activities necessary to assure compliance with this chapter. The board of health shall review required submittals and reports or other information to determine compliance including but not limited to the following:
 - (1) Site review and permitting information required by this chapter.
 - (2) Records or reports required as a condition of installer, septage hauler, or service provider registration.
 - (3) Sampling and other monitoring data required as a condition of an NPDES permit issued by the OEPA and/or an operation permit issued by the board of health.
 - (4) Information on HSTS performance gathered during a board of health inspection.

- (C) HSTS shall be operated and maintained in compliance with this chapter. The board of health shall conduct O&M management in accordance with rule 29-16.1 of this Chapter and shall conduct residuals management in accordance with rule 29-16.2 of this Chapter.

- (D) No person shall violate this chapter, orders issued pursuant to these chapters by the board of health, or the conditions of a registration or permit issued in accordance with this chapter. Upon determining noncompliance, the board of health shall notify the owner or other responsible party of the determination of noncompliance. The board of health notification shall specify any necessary corrective action and the time line for compliance as applicable. The board of health shall provide for due process protection in its implementation of compliance and enforcement duties and shall provide opportunity for compliance hearings and appeal of board of health orders.

29-16.1 O&M management.

This rule promotes a proactive and preventive approach to managing HSTS performance. The operation permits required in statute and rule serve as the legal means to establish O&M requirements, and in some cases, mandatory service contracts. The "USEPA Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems (2003)" provides a resource for assessment of state and local management programs.

- (A) The board of health shall implement an O&M management program in compliance with this chapter. An O&M management program shall include but is not limited to the provisions of this rule.
 - (1) HSTS permit records shall be organized by location providing a history of siting, design, installation, alteration, operation, monitoring, maintenance, and abandonment activities. The results of any O&M monitoring or reporting required by this chapter shall be maintained in the HSTS permit record.
 - (2) The board of health shall comply with operation permit requirements in paragraph (C) of rule 29-09 of this Chapter.
 - (3) Tracking of activities and requirements associated with the conditions of an operation permit or this chapter shall be required, including but not limited to:
 - (a) Dates of board of health operation inspections including the inspection required in paragraph (C)(3) of rule 29-09 of this Chapter.
 - (b) Time line for the expiration and renewal of an operation permit as applicable.
 - (c) Record of owner compliance with service contract requirements in accordance with this chapter and the operation permit conditions established in paragraph (C)(5) of rule 29-09 of this Chapter.
 - (4) O&M in accordance with manufacturer's instructions shall be met when required as a condition of an operation permit or this chapter. A person may demonstrate the required O&M in lieu of having a board of health inspection conducted when an inspection is otherwise required. This may include a person securing a service contract or being certified for O&M service by a manufacturer in lieu of a required board of health inspection for which an inspection fee is charged. This shall not preclude the board of health from conducting compliance inspections for general oversight purposes nor from requiring payment of an operation permit fee for O&M management.
- (B) When establishing O&M management provisions in addition to those required in this chapter, the board of health shall consider the following:
 - (1) Increased levels of management related to risk conditions associated with higher HSTS density, HSTS complexity and reliability, and the location of HSTS in areas of high risk for surface or ground water contamination or where there are existing unsanitary conditions due to a high incidence of HSTS substandard performance or failure.

- (2) Recording of operation permit conditions, service contract requirements, or other O&M management information on property deeds as a means to provide notification upon transfer of property served by an HSTS.
- (3) Utilization of private sector professionals and responsible management entities or designation of qualified agents to conduct monitoring or other O&M management responsibilities when the board of health provides oversight to assure compliance with this chapter.
- (4) Inclusion of alternative O&M management mechanisms such as web-based reporting, remote telemetry, and use of publicly and privately available database programs to support O&M tracking requirements.

29-16.2 **Residuals management.**

This rule includes the requirements for the management of HSTS residuals and the collection, transportation, disposal, and land application of domestic septage. The land application requirements in this rule are in addition to those in 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).

- (A) The board of health shall assess the management of HSTS residuals generated within its jurisdiction, including adequate capacity for the disposal of HSTS residuals and/or land application of domestic septage within the area of its jurisdiction. Residuals management by the board of health shall include but is not limited to the following:
 - (1) Notification to septage haulers registered by the board of health of available receiving locations for HSTS residuals and any prohibitions on the land application of domestic septage. Compliance with paragraph (B) of this rule is required when land application is permitted by the board of health.
 - (2) Provision of information to HSTS owners on recommended time lines for removal of residuals from HSTS components including more frequent removal when a garbage disposal is in use
 - (3) Requirements for reporting of residuals removal or tank pumping as applicable when required as a condition of an operation permit or as necessary to demonstrate compliance with this chapter.

- (B) Land application of domestic septage shall not create a public health nuisance and shall be performed for agronomic benefit in compliance with this paragraph and 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations) on sites approved by the board of health.
 - (1) A land application site may be considered for approval by the board of health if the following is provided by the registered septage hauler:
 - (a) Written permission from the property owner to land apply septage and information on the presence of any field tile within the proposed land application site.
 - (b) Information from an order two soil survey indicating that the site has a slope no greater than eight percent, has at least three feet of soil above ground water, has at least four feet of soil above bedrock, rock and other fragments, and is free of conditions that could allow land application of septage to cause contamination of ground water or run off to surface waters.
 - (c) Additional information required by the board of health concerning the site, the surrounding area, or the land application methods used by the registered septage hauler.

- (2) The board of health shall conduct a site inspection prior to approval and shall enforce the prohibitions in this paragraph. Land application of domestic septage is prohibited within the sanitary isolation radius of a public water system well as determined in accordance with rule 3745-09-04 of the Administrative Code. Land application of domestic septage is also prohibited within an inner management zone of a drinking water source protection area determined to be highly susceptible to contamination by the OEPA source water protection and assessment program for a community or non-transient non-community public water system as defined in rule 3745-81-01 of the Administrative Code. The area to be used for land application shall meet the following minimum horizontal isolation distances:
 - (a) Two hundred feet from any dwelling, business, or location used for community gatherings or recreational purposes.
 - (b) Fifty feet from any property line.
 - (c) One hundred feet from any private water system, non-potable water well or water supply well used by a transient, non-community public water system as defined in rule 3745-81-01 of the Administrative Code.
 - (d) Fifty feet from any waters of the state excluding ground water but including grass waterways.
 - (e) Three hundred feet from a sinkhole or drainage well, or one hundred feet if a permanent vegetative buffer is maintained round the sinkhole or drainage well.
 - (f) Fifteen hundred feet from a public drinking water surface water intake.
- (3) The amount of septage applied to the site shall not exceed the annual nitrogen application rate required for the type of vegetation on the site. The soil shall be tested every two years for phosphorus and shall not exceed the recommended levels for agronomic loading rates. Any vegetation or crop grown on the application site shall be harvested, grazed, or otherwise removed in accordance with 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).
- (4) Trash shall be screened and removed from the septage prior to land application and shall be dewatered prior to disposal as solid waste.
- (5) Septage shall be land applied in accordance with the following:
 - (a) Septage shall not be permitted to pool or flow on the surface of the ground.
 - (b) Septage shall be applied in accordance with the vector attraction reduction requirements and the pathogen reduction requirements of 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).

- (6) Records shall be maintained by the septage hauler for at least five years to demonstrate compliance with this rule and the requirements of 40 C.F.R. 503 (as published in the July 1, 2005 Code of Federal Regulations).

29-17 **HSTS abandonment.**

This rule establishes the procedures for the proper abandonment of an HSTS. The purpose is to assure the final removal of sewage residuals and to prevent hazards that could occur when tanks or other components are no longer in use.

- (A) Any person who is no longer using an HSTS or an applicable component of an HSTS shall properly abandon all tanks, dosing tanks, and/or pretreatment components that are no longer in use in accordance with this rule.
- (B) All tanks, dosing tanks, and/or pretreatment components shall have the sewage contents pumped and removed by a registered septage hauler. If there is a need to remove solid materials such as filter media or other HSTS components, these shall be taken to an approved solid waste disposal facility or shall be managed in a manner that prevents a public health nuisance and contamination of surface or ground water.
- (C) Upon removal of the contents of the tank, dosing tank and/or pretreatment component, the top shall either be completely removed or shall be collapsed and at least one side collapsed to prevent containment of water in the abandoned tank or component. The resulting void shall be filled to the ground surface with inert and clean fill materials such as sand, gravel, or compacted soil in an amount and manner that allows for settling and prevents ponding of surface water.
- (D) Any person who abandons an HSTS system shall notify the board of health in writing that the HSTS has been properly abandoned, and shall provide the following information that shall be retained by the board of health:
 - (1) The owner and location of the abandoned HSTS and the date of abandonment.
 - (2) The name of the registered septage hauler and the name of the person or registered installer that performed the HSTS abandonment.
 - (3) The manner in which the tank, dosing tanks, and/or pretreatment components were abandoned or removed.

29-18 **Variations and related provisions.**

- (A) Any person who believes that a variance from the rules of this chapter is necessary shall make application in writing to the board of health, specifically stating the proposed variance from the particular rule or rules.
- (B) The board of health may grant a variance from the requirements of this chapter as shall not be contrary to the public interest, where a person shows that because of practical difficulties or other special conditions compliance with this chapter will cause unusual and unnecessary hardship, and that no other technically feasible or economically reasonable means of compliance exists in rule. Financial impact alone may not form the basis for a variance under this rule. No variance shall be granted that will defeat the spirit and general intent of this chapter, or be otherwise contrary to the public interest or adversely affect the public health or cause contamination of the environment.
 - (1) The board of health shall not grant a variance from the provisions in paragraphs (C) and (D) of rule 29-07 of this Chapter.
 - (2) The board of health shall not grant a variance from the provisions of paragraphs (A) and (B) of rule 29-13 of this Chapter.
- (C) HSTS or HSTS components differing in design or function from systems or components, the use of which is authorized under this chapter, may qualify for approval by the director of health subject to the review and recommendation of the HSTS technical advisory committee established pursuant to division (A) of section 3718.03 of the Revised Code. A manufacturer seeking approval for use of a system or component that differs in design or function from systems or components authorized under this chapter shall submit an application and information as required in division (A) of section 3718.04 of the Revised Code. The system or component shall be reviewed by the HSTS technical advisory committee and the department of health in accordance with the standards and guidelines developed under division (F)(1) of section 3718.03 of the Revised Code. The HSTS technical advisory committee shall advise the director on approval or disapproval of such systems or components. The director of health shall approve or disapprove the use of systems or components submitted for review and shall provide notification of the approval or disapproval in accordance with section 3718.04 of the Revised Code. The director of health shall utilize a department of health web site listing to notify boards of health and interested parties of those systems and components approved under this paragraph and section 3718.04 of the Revised Code.