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. Carefull 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.
