Minnesota Pollution Control Agency

Policy and Planning Division

Community and Area Wide Programs Section

Facts about individual sewage-treatment systems

Other system classification

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History

"Other" individual sewage-treatment systems (ISTSs) were formally classified as "Experimental" systems in Minn. Rule Chapter 7080 – 1996. In the 1978 and 1989 versions of 7080, they were included with "Alternative" systems as an "other system" option. The "other system" classification was reinstated in the current (1999) rule to allow new, sometimes unproven technologies to be used with some safeguards.

Relation to other classifications

Chapter 7080 (1999) has four system classifications: Standard, Alternative, Other and Performance. Here is how they compare with one another:

System Type	Reliability	3 feet of Soil Treatment	System Options (not comprehensive)	Monitoring Required	Annual Operating Permit Required
Standard	High	Required	Rock, gravelless pipe, chamber trenches; seepage beds; dual field; mounds; at-grades; separation; aerobic tanks followed by standard soil treatment systems	Septic tank evaluation at least once every three years; aerobic tank maintenance per service agreement	No
Alternative	Less than high	Required	Floodplain, privies, holding tanks	Holding tank maintenance per service contract	No
Other	Potential for much less reliability	Required	Peat filter, sand filter, mounds on fill	Operation, maintenance and hydraulic monitoring, minimum	No
Performance	Potential for no reliability	Not required (needs "some" separation)	Recirculating sand and gravel filters, sequencing batch reactors, systems using soils with less than 3 ft. of vertical separation	Treatment and hydraulic monitoring	Yes

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What is an Other system?

In its simplest terms, an Other system is a modification of a standard design to fit a unique situation or application of a new technology that still relies on soil treatment [*i.e.*, 3 feet (ft.) of suitable soil below the system bottom] and disposal. Systems designed, constructed and operated under the Other system classification (7080.0178) must meet or exceed the following requirements:

- Only sewage may be discharged into the system.
- Treatment processes and devices shall not allow bodily contact with sewage.
- Disposal of sewage effluent must be below grade.
- The system shall be protective of physical safety.
- The system must conform to all applicable federal, state and local requirements.
- The system must be operated and maintained in accordance with manufacturer's requirements.
- The system relies on "3 ft. of soil treatment." Three feet of soil treatment means (a) having a vertical separation distance of suitable soil from the bottom of the drainfield to the seasonally saturated soil or bedrock, (b) using suitable soil that has a soil texture of medium sand or finer (*e.g.*, loams); and (c) operating to load effluent at a rate no greater than 1.2 gallons per day per square ft (gpd/ft.$^{2)}$ at a hydraulic head of 30 inches or less. All systems ***not*** using 3 ft. of soil treatment would be considered Performance systems (7080.0179).

What is a 2+1 system?

A 2+1 system is an Other system that creatively uses three ft. of soil treatment. For example, a mound is considered a 2+1 system (*e.g.*, 2 ft. of sand placed over 1 ft. of original soil); however, a mound system is a "standard 2+1 system" because its design and treatment have been proven to work over time and location. This system does not require additional monitoring.

Another 2+1 system could be a single-pass sand or peat filter using 2 ft. of clean sand or peat that has a maximum hydraulic loading rate of 1.2 gpd/ft^2. The 1 ft. could then be a discharge to a trench system with at least 1 ft. of unsaturated soil or sand above saturated soil or bedrock. This would meet the 3 ft. of vertical separation requirement. Since these systems rely on passive soil treatment, no monitoring of the effluent quality is needed. It should be noted that since a clogging mat may not form in the soil dispersal area, pressure distribution needs to be used to meet the required maximum 1.2 gpd/ft^2 loading rate. The main uncertainty with 2+1 systems is the hydraulic performance of the trench system having only 1 ft. above a seasonally saturated soil or bedrock.

Long-term performance

During the design process, the costs for construction, operation, monitoring, service, component replacement, and management must be estimated along with the anticipated system life. In addition, the hydraulic and organic loading rates to all components of the system must be included in the design and these loading rates should be compared to a standard system. Standard flow amounts must be used and cannot be reduced.

When can an Other system be used?

Although past versions of Chapter 7080 specified where and when non-standard systems could be used; their use now is determined by local ordinances. Chapter 7080 requires that reasonable assurance of system performance be submitted to the local unit of government for its approval.

Monitoring and mitigation plans

Chapter 7080 requires that other systems have an approved monitoring and mitigation plan before the issuance of a permit. The requirements of the plans and their approval are done by the local unit of government.

The monitoring plan must adequately detail the operation, maintenance and monitoring for the proposed system and must require routine flow measurement. Monitoring results must be submitted to the local unit of government. A period of time, such as 30 days, should be required for notification of minor infractions; 24-hour notification should be required for imminent-threat situations.

The mitigation plan must indicate what the permittee (system owner or owner's agent) will do if the system fails to function as designed. The plan must detail the actions, responsible parties and appropriate timelines for mitigation.

Future compliance inspections

For an existing Other system to be in compliance, it must not be an imminent health threat (exposed sewage), must have been installed with 3 ft. of vertical soil treatment, and have monitoring results indicating that the system is performing as designed. If monitoring results have not been taken, a determination of the current performance must be made before compliance can be determined and local unit of government enforcement actions should be applied to the system owner for not meeting the monitoring requirements.

For more information

Call your local ISTS permitting authority for more information on the allowable use of Other systems. Your local ISTS permitting authority may be the county planning and zoning or environmental health office, the township planning and zoning office, or city building inspector.

For information on the state rules, visit the Minnesota Pollution Control Agency's Web site at http://www.pca.state.mn.us, call (651) 282-6246 and leave a message on the ISTS Information Line, or contact your district representative at (800) 657-3864.