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Onsite wastewater treatment systems

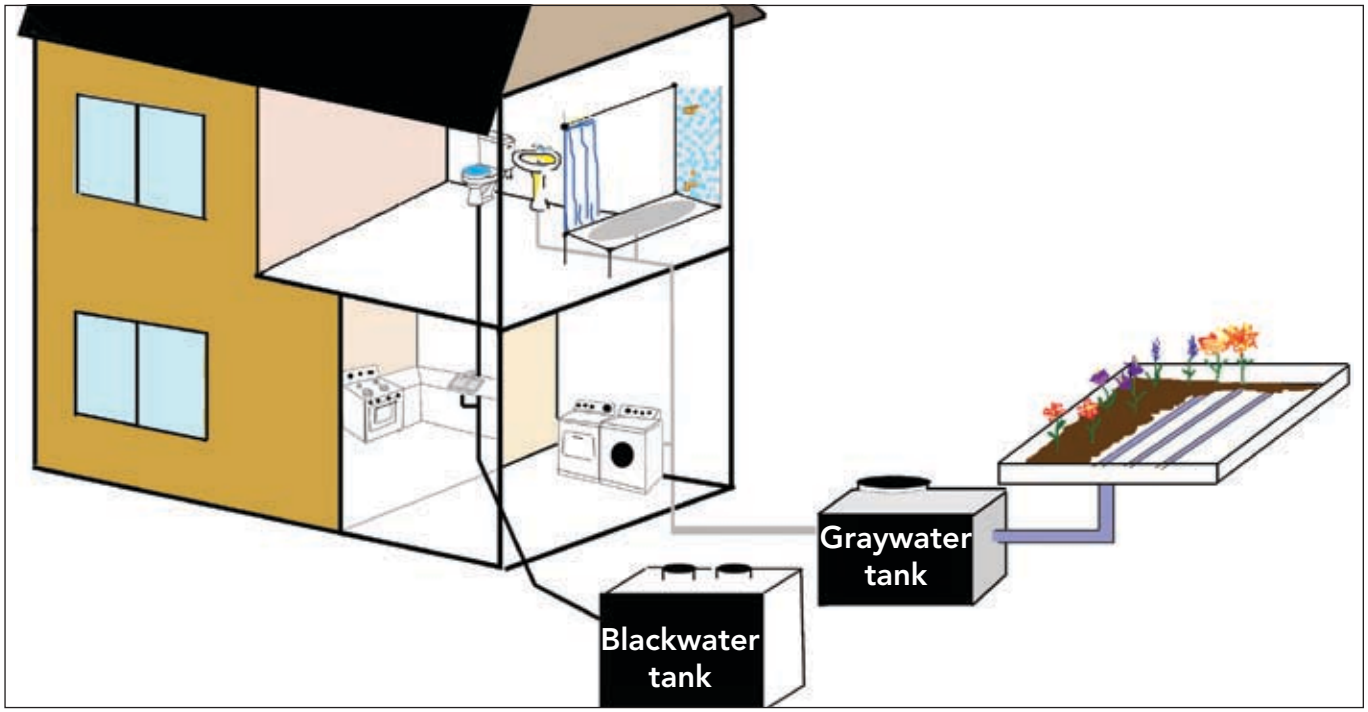

Figure 1: A home with separate blackwater and graywater plumbing systems.

Graywater Use and Water Quality

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Reusing and recycling are growing trends—and that includes water, with more people considering using graywater from their homes in their landscapes. This reuse of graywater can reduce the amount of wastewater entering sewers or treatment systems, reduce the amount of fresh water used on landscapes and help preserve limited fresh water supplies.

The Texas Administrative Code defines graywater as water from:

- ✔ Showers and bathtubs
- ✔ Sinks, except those used for disposal of hazardous or toxic materials or for food preparation or disposal
- ✔ Clothes-washing machines

The code excludes water that has washed materials soiled with human waste, such as diapers, and water that has been in contact with toilet waste. This water, known as blackwater, includes flush water from toilets and urinals and wastewater from food preparation sites. Blackwater contains higher concentrations of nitrogen, organic matter and human pathogens than does graywater.

In 2003, the Texas Legislature passed House Bill 2661 to provide guidance on residential graywater systems that can handle less than 400 gallons per day. This legislation paved the way for broader graywater reuse in practical and responsible ways that protect human health and the environment.

Because graywater is not clean and must be managed properly, it must stay on the homeowner's property, and cannot be allowed to flow into bodies of water such as lakes, riv-

ers, streams or ditches and drainage paths that would lead to water bodies.

Graywater system design considerations

Sources: To reuse graywater, a homeowner first must decide which graywater sources to collect. Using graywater from all sources will increase the risk of pollutants in the graywater. Before using graywater, evaluate what it is to be used for and what contaminants are likely to be found in it. This will help identify any treatment necessary before usage.

Collection and storage: In systems built before Jan. 6, 2005, graywater from residential clothes-washing machines may be discharged onto the ground through a gravity flow system. Graywater should be diverted through settling tanks and pump tanks for treatment and distribution. Generally, graywater should be stored for less than 1 day, especially is if it is to be dispersed onto the ground surface.

Texas graywater rules also require that graywater be collected in an approved tank that:

- ✔ Is labeled clearly as "nonpotable water"
- ✔ Restricts access, especially to children
- ✔ Eliminates habitats for mosquitoes and other vectors
- ✔ Can be cleaned
- ✔ Meets the structural requirements of the 2004 American Water Works Association standards

Graywater distribution

Graywater should be applied underground to minimize potential health risks and odors. Spraying graywater is forbidden.

These good-sense guidelines can help protect human and environmental health:

- ✔ Do not irrigate edible root crops with graywater.
- ✔ Use graywater for well-established plants rather than for seedlings.
- ✔ Graywater usually is slightly alkaline, so avoid using it to water plants that thrive in acidic soils.
- ✔ To prevent salt accumulation, distribute graywater over a large surface area and rotate distribution from one area to another.
- ✔ Select reuse applications appropriate for the amount of water to be generated in the system.

Safety concerns

Water washed down sinks and showers into a graywater system will end up in the yard. Consider these safety tips when using such systems:

- ✔ If a resident of the home comes down with a contagious sickness, divert the graywater from the house to an on-site wastewater treatment system or to a municipal sewer until that person has recuperated.
- ✔ Water used to launder clothing soiled by pesticides or other toxic substances should not be discharged into a graywater system.
- ✔ As with any water treatment system, regular operational and maintenance checks must be performed.
- ✔ If anyone becomes ill after exposure to graywater disposal areas, discontinue using the graywater system until the source of the illness has been determined.

For more information on graywater reuse systems see Extension publication B-6176, *Onsite Wastewater Treatment Systems: Graywater,* and L-5480, *Onsite Wastewater Treatment Systems: Graywater Safety.*

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