



CITY OF LAKEPORT
Community Development Department
225 PARK STREET
LAKEPORT, CALIFORNIA 95453
TELEPHONE: 707.263.5615 x205 FAX: 707.263.8584

GREYWATER FACT SHEET

What is Greywater?

Greywater, defined by the California Health and Safety Code (Section 17922.12a) is "untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes." The Code also specifies what household sources can provide grey water: bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs. Any wastewater coming from kitchen sinks or dishwashers cannot be classified as greywater in California.

There are significant distinctions between greywater and **toilet wastewater (called "blackwater")**. These distinctions tell us how these wastewaters should be treated /managed and why, in the interests of public health and environmental protection, they should not be mixed together.

Why use Greywater?

It's a waste to irrigate with great quantities of drinking water when plants thrive on used water containing small bits of compost. Unlike a lot of ecological stopgap measures, greywater reuse is a part of the fundamental solution to many ecological problems and will probably remain essentially unchanged in the distant future. The benefits of greywater recycling include:

- Lower fresh water use
- Less strain on failing septic tank or treatment plant
- Better treatment (topsoil is many times more effective than subsoil or treatment plant)
- Less energy and chemical use
- Groundwater recharge
- Plant growth
- Reclamation of otherwise wasted nutrients
- Increased awareness of and sensitivity to natural cycles



Why does greywater matter?

Viewed narrowly, greywater systems don't look that important. A low flow showerhead can save water with less effort. A septic system can treat greywater almost as well.

But when you look at the whole picture—how everything connects—the keystone importance of greywater is revealed.

- Ecological systems design is about context, and integration between systems. The entirety of integrated, ecological design can be reduced to one sentence: *do what's appropriate for the context*.
- Ecological systems—rainwater harvesting, runoff management, passive solar, composting toilets, edible landscaping—all of these are more context sensitive than their counterparts in conventional practice; that's most of what makes them more ecological.
- Greywater systems are more context sensitive than any other man-made ecological system, and more connected to more other systems.
- Get the greywater just right, and you've got the whole package right—and that matters.

Many people and organizations instinctively recognize that greywater is the ideal test case for the transition to a new way of regulating and building that is appropriate to a post-peak resource, mature civilization.

The US Green Building Council, the City of Santa Barbara, CA, Oregon ReCode, and SLO Green Build are among those organizations which independently chose greywater standards as the technology with which to launch their programs of regulatory reform.

The benefits of greywater recycling (in detail)

* Lower fresh water use

Greywater can replace fresh water in many instances, saving money and increasing the effective water supply in regions where irrigation is needed. Residential water use is almost evenly split between indoor and outdoor. All except toilet water could be recycled outdoors, achieving the same result with significantly less water diverted from nature.

* Less strain on septic tank or treatment plant

Greywater use greatly extends the useful life and capacity of septic systems. For municipal treatment systems, decreased wastewater flow means higher treatment effectiveness and lower costs.

* Highly effective purification

Greywater is purified to a spectacularly high degree in the upper, most biologically active region of the soil. This protects the quality of natural surface and ground waters.

* Less energy and chemical use

Less energy and chemicals are used due to the reduced amount of both freshwater and wastewater that needs pumping and treatment. For those providing their own water or electricity, the advantage of a reduced burden on the infrastructure is felt directly. Also, treating your wastewater in the soil under your own fruit trees definitely encourages you to dump fewer toxic chemicals down the drain.

* Groundwater recharge

Greywater application in excess of plant needs recharges groundwater.

* Plant growth

Greywater enables a landscape to flourish where water may not otherwise be available to support much plant growth.

* Reclamation of otherwise wasted nutrients

Loss of nutrients through wastewater disposal in rivers or oceans is a subtle, but highly significant form of erosion. Reclaiming nutrients in greywater helps to maintain the fertility of the land.

* Increased awareness of and sensitivity to natural cycles

Greywater use yields the satisfaction of taking responsibility for the wise husbandry of an important resource.

Our Current Greywater Code

California Greywater Regulations. California's greywater code is found in Chapter 15 of the California Plumbing Code (CPC). Under the current code washing machine systems can be constructed without a permit in single family homes (1 or 2 units), so long as 13 guidelines are followed (see below). Other types of systems require a permit in the state.

Since 2009, the California code does not require a permit or inspection for washing machine systems that do not alter the existing plumbing as long as the installer follows the guidelines listed below. (Note that for a few months single fixture systems were included as part of the permit-exempt systems but were then removed from the code. Between August 4th, 2009 and January 27th, 2010, it was legal to install the "single fixture" system without a permit.)

Summary of requirements:

The system **must**:

- have an easy way to direct flow back to the sewer/septic (like a 3-way valve). The valve must be labeled.
- send the water to irrigate landscape plantings
- keep the water on the same property it is produced and follow set-backs listed in the code
- have a maintenance manual
- discharge greywater under a 2" cover of mulch, plastic shield, or stones.

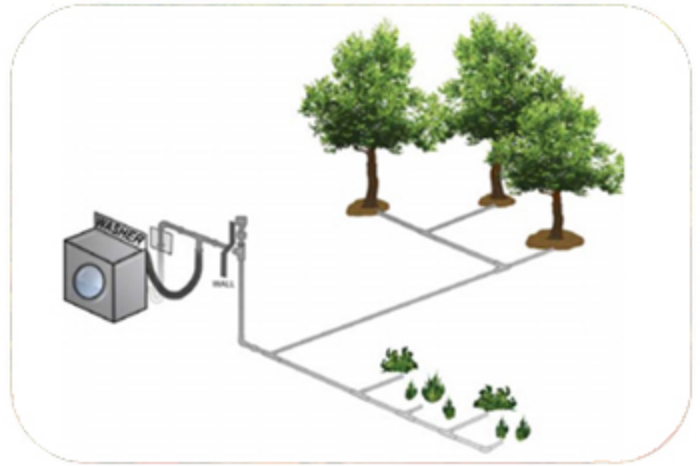
The system **must not**:

- contain diaper water
- contain hazardous chemicals (such as from a home photo lab)
- have pooling greywater or runoff
- make greywater accessible to people or pets (such as in an open tub)
- include a pump (except the washing machine's internal pump)
- connect to the potable water supply

Permitted Systems

California greywater systems are separated into three categories, each with different permitting requirements:

1. Single Fixture or Clothes Washer
 - No permit required
2. Single System
 - Exceeds washer or single fixture system
 - Discharge capacity is 250 gallons per day or less
 - Construction permit required
3. Complex System
 - Multi-family or multi-dwelling unit
 - Discharge capacity is greater than 250 gallons per day
 - Construction permit required



Requirements for construction permits:

- Applies for Single System or Complex Systems
- Identify groundwater level and soil type for absorption qualities
- All components must be water tight
- Must be inspected by the appropriate enforcement agency
- Other local regulations and inspection requirements many apply (contact local enforcement agency)

All California greywater systems must meet the following requirements:

- No connection to a potable water system
- Designed based on location, discharge capacity, soil type and groundwater level
- The area of discharge must be on the same plot as the source, unless lawfully exempt.
- No construction until plan is approved by appropriate enforcement agency (except for clothes washer or single fixture system)
- Dual discharge must be available to switch between greywater and sewer
- No diaper wash water or possible contact with any fecal material
- Greywater may **not**
 - be used for spray irrigation
 - be allowed to pond
 - runoff from desired discharge location
 - discharge to storm sewer
 - discharge to surface body of water
- The discharge point must be covered by 2 in (51mm) material (mulch, rock, soil)
- The greywater cannot be used on root crops or edible parts of food crops

Basic Greywater Guidelines

Greywater is different from fresh water and requires different guidelines for it to be reused.

1. Don't store greywater (more than 24 hours). If you store greywater the nutrients in it will start to break down, creating bad odors.
2. Minimize contact with greywater. Greywater could potentially contain a pathogen if an infected person's feces got into the water, so your system should be designed for the water to soak into the ground and not be available for people or animals to drink.
3. Infiltrate greywater into the ground, don't allow it to pool up or run off (knowing how well water drains into your soil (or the soil percolation rate of your soil) will help with proper design. Pooling greywater can provide mosquito breeding grounds, as well as a place for human contact with greywater.
4. Keep your system as simple as possible, avoid pumps, avoid filters that need upkeep. Simple systems last longer, require less maintenance, require less energy and cost less money.
5. Install a 3-way valve for easy switching between the greywater system and the sewer/septic.
6. Match the amount of greywater your plants will receive with their irrigation needs.

FREQUENTLY ASKED QUESTIONS

How much grey water do I generate?

On average 100 Liters of reusable grey water is generated by one person every day.

Will grey water affect my plants and my soils?

It is strongly recommended to use grey water friendly detergents with low phosphorous and low salt content.

Is greywater reuse safe?

Yes. There are eight million greywater systems in the US with 22 million users. In 60 years, there has been one *billion* system user-years of exposure, yet there has not been one documented case of greywater transmitted illness.

Can I water my lawn area with grey water?

Sub-surface irrigation of lawns using grey water has been achieved successfully in many places. Solutions such as a trifluralin impregnated drippers (root guard) or filters (tech-filters) are available to protect from root intrusions and should be used with sub-surface irrigation of lawn areas.

Can I water a garden area smaller than the required minimum?

Each state may have different guidelines pertaining to the minimum disposal area required for the reuse of Grey water. These minimum areas have been set so as to protect the ground water resources and our environment (please refer to your local regulations). It is, however, possible to reduce the number of fixtures connected to your grey water outlet pipe, in order to help in reduce the amount of grey water generated. This will allow for a reduced minimum irrigation area requirement.

Can I water a garden area larger than the recommended maximum?

Yes, it is possible but your garden may not get enough water during the peak summer months. To remedy this situation, you can provide a top up system. The use of multiple stations with the grey flow systems should be done through the use of a manual 3-way valve. **Automated solenoid valves should not be used as they are not designed to cope with the poor quality of the grey water.**

Links:

<https://greywateraction.org/greywater-faq/>

<http://www.thegreywaterguide.com/california.html>

https://www.waterboards.ca.gov/laws_regulations/

http://www.appropedia.org/California_greywater_regulations_and_design

http://www.hcd.ca.gov/codes/shl/graywater_emergency.html