

This formula does not account for irrigation efficiency. If the irrigation system does not distribute water evenly, extra water will need to be applied.

For example: A three-bedroom home with a washer will produce 1,120 GPW (7 days x 160 GPD). If ET = 2 inches per week, then with the 1,120 gallons of grey water a homeowner could irrigate the following :

- a. Eight small fruit trees: $8 \times 50 = 400$ gallons (high water using, 50-foot canopy)
- b. Eight medium shade trees: $8 \times 62 = 496$ gallons (medium water using, 100-foot canopy)
- c. Seven large shrubs: $7 \times 31 = 217$ gallons (medium water using, 50-foot canopy)
- d. Total water use per week: 1,113 GPW

4.12.4 Other Requirements

1. The Uniform Plumbing Code (UPC) Grey Water Standards require that all grey water piping be marked *Danger—Unsafe Water*.
2. Valves in the plumbing system must be readily accessible, and backwater valves must be installed on surge/holding tank drain connections to sanitary drains or sewer piping. Ball valves are recommended to be used in the system. Finally all piping must be downstream of water-seal type trap(s). If no such trap exists, an approved vented running trap shall be installed upstream of the connection to protect the building from possible waste or sewer gasses.
3. Surge tank must be vented and have a locking gasketed lid. If the surge tank is within the structure, then the venting must meet the requirements of the UPC. Outside surge tanks shall be vented with a 180° bend and screened. A minimum capacity of 50 gallons is required. The surge tank must be placed on a 3-inch concrete slab or on dry, level compacted soil and the lid labeled *Grey Water Irrigation System, Danger—Unsafe Water*. Surge tanks shall be constructed of solid durable materials, not subject to excessive corrosion or decay, and shall be watertight. The tank drain and overflow gravity drain must be permanently connected to the septic tank or sewer line. The drain and overflow drain shall not be less in size than the inlet pipe.
4. Filters with a minimum flow capacity of 25 GPM are required.
5. Pumps are usually required to lift the grey water from the surge tank to the irrigation system (section 4.18). Alternatively if all of the landscape plants are below the building drain lines, then the grey water irrigation system could use gravity to distribute the grey water.
6. Irrigation system can be either a mini-leachfield or a subsurface drip irrigation system. Mini-leachfield designs follow IDAPA 58.01.03.008, except for those deviations allowed by Table 4-10, and are required to use geotextile for the drainrock-soil barrier.

Notes:

1. The plants listed in Table 4-11 are tolerant of sodium and chloride ions or have been reported to do well under grey water irrigation.
2. Different types of media can be used in grey water filtration. These include nylon or cloth filters, sand filters, and rack or grate filters.
3. Table 4-10 lists criteria for the design of mini-leachfields.

Table 4-10. Grey water mini-leachfield design criteria.

Mini-leachfield Design Criteria	Minimum	Maximum
Number of drain lines per irrigation zone	1	—
Length of each perforated line	—	100 feet
Bottom width of trench	6 inches	18 inches
Total depth of trench	12 inches	18 inches
Spacing of line, center-to-center	3 feet	4 feet
Depth of earth cover over lines	6 inches	12 inches
Depth of aggregate over pipe	2 inches	—
Depth of aggregate beneath pipe	2 inches	—
Grade on perforated pipe	Level	1 inch/100 feet

Table 4-11. Sodium and chloride tolerant plants.

Agapanthus	Cottonwood	Honeysuckle	Olive	Rosemary
Arizona cypress	Crape myrtle	Italian stone pine	Pfitzer bush	Strawberry clover
Bermuda grass	Deodar cedar	Juniper	Purple hopseed bush	Star jasmine
Bougainvillea	Evergreen shrubs	Oaks	Redwoods	Sweet clover
Carpet grass	Holly	Oleander	Rose	

Figure 4-16 shows a single-tank gravity grey water system, and Figure 4-17 shows a single-tank pumped grey water system.