GREYWATER LAUNDRY TO LANDSCAPE
for Inland Valleys in Sonoma County

how to reuse water from your washing machine to irrigate your landscape and increase drought resilience
INTRODUCTION

Have you ever thought about the waste that occurs through the disposal of water that isn’t quite dirty, but isn’t quite clean?

This is considered GREYWATER.

Greywater may not be clean enough to be potable, but it’s clean enough to serve important functions around your property, such as irrigation. The water that is used to clean your laundry is a great example of this.

While you may not be able to drink it, the water that is used to clean your clothes could be redirected from the sewer to your landscape. Then, you could use it to grow species that you otherwise couldn’t in a water-resilient manner, such as many common fruit-bearing trees and shrubs!

These planting areas receive enough water to be able to support plants that would otherwise be water-costly to grow. These plantings can promote food security where non-irrigated plants couldn’t. Think fruit trees!
1. Evaluate L2L Feasibility
   - Is your washing machine: a. Near an outside wall? OR b. Over a crawlspace?
   - Is there a landscape area for greywater to irrigate that is: c. Within 50' of your washing machine? AND d. At or below the elevation of your washing machine? AND e. Outside of setbacks? Check local codes for healthy safety and setback info. Typical setbacks: Structures and Property lines - 2', Wells / Waterways - 100', Septic Tanks - 20'.

2. Landscape Planning
   - Identify existing or new plants to irrigate with greywater. Best plant types include: a. Medium water use trees, shrubs, perennials, vines, etc. b. If growing food, edible portions not in direct contact with soil (no leafy green or root vegetables).
   - Match the amount of greywater that you use (supply) with the water needs of your plants (demand). Supply varies by occupancy but generally: a. Front-loading washing machines irrigate 4-8 plants; b. Top loaders irrigate up to 15 plants.
   - Perform a percolation test: https://greywateraction.org/how-do-percolation-test/

3. L2L Build It!
   - Locate existing utilities and obstacles before digging: Dial 811 for Dig Alert.
   - Install ANSI Approved 3-way diverter valve: This will switch greywater back to sewer/ septic as needed. Locate in accessible place and clearly label orientation.
   - Install Air-Admittance valve above fill line of washer: This valve prevents siphoning of the water.
   - Drill pipe passage through wall or crawlspace to landscape: Try to avoid drilling through concrete or foundations unless it is the only route available.
   - Use 1" diameter HDPE or Blu lock irrigation tubing as main-line conveyance piping: All piping should slope at 2%.
   - Greywater must be distributed 2" below the surface: Dispense water into mulch basins to reduce human contact with non-potable greywater.
   - Install a mulch shield or valve box: Locate at end of open pipe within mulch basins to reduce erosion and direct greywater to plant roots.

Example greywater mulch basin (Source: https://www.milkwood.net/2012/02/29/diy-mulch-pit-greywater-system/)

DO
- DO think about the plants that you would like to grow, but may not have the water allowance to.
- DO ensure that you plan mulch basins to be at least 10 feet from a building foundation that has poor surrounding drainage to limit excess groundwater infiltration.
- DO post signs educating your neighbors that you are irrigating your landscape with recycled water!

DO NOT
- DO NOT attempt to install a greywater system yourself if you cannot: call a professional for help.
- DO NOT use laundry detergents that are high in environmentally harmful chemicals such as phosphorus, salt, boron, and chlorine. Ensure that your detergent is greywater-system friendly.

ADDITIONAL RESOURCES
- Daily Acts: Greywater 101
- Laundry Safe Supplies
- Perform a Greywater Percolation Test
- Sonoma County Greywater Codes
- Sonoma-Marin Saving Water Partnership
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GREYWATER: LAUNDRY TO LANDSCAPE

Greywater system construction details
and greywater system notes

General Notes:

A. The drawing are diagrammatic in nature and are created to represent the concepts as associated with on-site water reuse and storm water management/irrigation installations. For all site dimensions and exact relative locations, field condition e. t. s. s. shall be requested from the property owner.

B. Typical front loading washing machines are able to distribute water up to 6 locations. A typical front loading washing machine is able to distribute water up to 6-12 locations (depending on the site conditions).

C. All irrigation points to be 2 inches below the surface in mulch basins.

D. The end of main line should be fully open with no plug / valve.

E. Verify minimum horizontal offsets for greywater per CPC 2016 = local county codes for the following:
   - Building Structures
   - Property Line
   - Water Supply Wells
   - Septic Tank

F. Laundry to Landscape (L2L) system must be equipped with accessible three way diverter valve with sign that indicates operation, so washing machine discharge water can be diverted to sink/skimmer during rain events or if soil reaches a high level of saturation.

G. Products with bleach, soap, alcohol or other industrial chemicals are not recommended for use in these greywater systems.

H. 1” SCH 40 PVC will slope downward at 2 degrees or 1/8” per foot.

I. All greywater conveyance lines shall be marked “Not Potable. Do not Drink.”

J. Laundry to Landscape (L2L) greywater systems are exempt from permitting per CPC 2016.

K. - Water is coming directly from washing machine.
   - No existing house plumbing has been altered

L. - All devices will be ASME/ANSI approved. All devices to be accompanied with reference and maintenance instructions per maintenance and monitoring plan.

M. Client will be provided with a maintenance manual for the system.

N. - All existing tanks, piping, and mechanical work will be avoided and protected where necessary throughout construction.

O. - All pipe and/or irrigation pipes shall be a minimum 1/2” diameter of Schedule 40 ISI PVC pipe (plastic pipe).

Sheet Notes:

1. Front loading washing machine (Typ.)
2. Washing machine drain hose
3. Sanitary tee to sewerage provision
4. 1” PVC 90 elbow
5. Mounting brackets (4’ Spacing)
6. 1” PVC Pipe
7. 1” PVC Male Barb X Female Slip Adapter
8. 3-Way diverter valve
9. Auto Vent (minimum size 1.5”) - To prevent potential suction in the system
   - Optional - Install outside if laundry room is not well ventilated or too warm.
10. 1/2” Threaded Adapter
11. 1/2” to 1/2” Elbow
12. 1” PVC Tee
13. 1” PVC Check Valve - To prevent the back-flow of laundry water
14. 1” to 1/2” barbed fitting to 1/2” poly line
15. 1/2” poly line
16. 1” PVC Valve
17. 0 Round irrigation valve box w/ lid for each multi basin
18. Multi circle - Irrigating freen, shrubs or ground cover
19. Landscape pits to secure irrigation box into place

LAUNDRY TO LANDSCAPE (Typ.) - ELEVATION VIEW

C

NOT TO SCALE

ENLARGED DIAGRAMATIC ILLUSTRATION ONLY

C

Diagram of greywater system with notes on construction details and system notes.
GREYWATER: LAUNDRY TO LANDSCAPE

Plants to be irrigated by greywater systems

### TREES
- Acer macrophyllum
  - Big Leaf Maple

### SHRUBS
- Acca sellowiana
  - Pineapple Guava

### PERRENIALS
- Achillea millefolium
  - Yarrow

### GRASSES
- Calamagrostis foliosa
  - Mendocino Reed Grass

### VINES
- Actinidia argata
  - Hardy Kiwi

### OTHER CONSIDERATIONS
- full sun
- partial sun / shade
- full shade
- edible
- native

### SUN/SHADE
- Citrus spp.
  - Citrus tree

- Diospyros kaki
  - Persimmon

- Ficus carica
  - Common fig

- Punica granatum
  - Pomegranate

- Cynara scolymus
  - Artichoke

- Carex praegracilis
  - California Field Sedge

- Lathyrus odoratus
  - Sweet Pea Vine
GREYWATER: LAUNDRY TO LANDSCAPE

GREYWATER PLANTS
Plants to be irrigated by greywater systems

**SUN/SHADE**
- full sun
- partial sun / shade
- full shade

**OTHER CONSIDERATIONS**
- edible
- native

**TREES**
- Platanus racemos
  - Sycamore

**SHRUBS**
- Rubus ursinus
  - California Blackberry
- Rosa californica
  - California Wild Rose
- Ribes aureum
  - Golden Currant
- Junglan californica
  - California Black Walnut

**PERRENIALS**
- Iris douglasiana
  - Douglas Iris
- Heuchera spp.
  - Coral Bells
- Dicentra formosa
  - Pacific Bleeding Heart

**GRASSES**
- Juncus textilis
  - Basket Rush
- Juncus patens
  - California Gray Rush
- Festuca glauca
  - Blue Fescue

**VINES**
- Physalis ixocarpa
  - Tamatillo Vine
- Passiflora edulis
  - Passionfuit Vine
- Selenicereus undatus
  - Dragon Fruit Vine