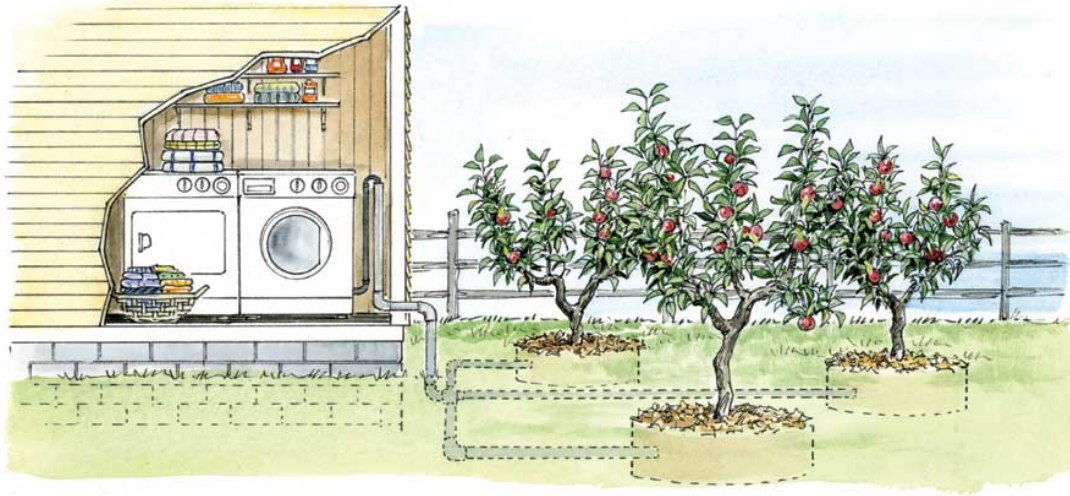


# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



# Greywater L2L Program





# Outline of Presentation

Pasadena Water and Power

- **Greywater Overview**
- **PWP L2L Program**
  - > Program Development / Partnerships
  - > Trainings
  - > Program Launch
  - > Process / Application / Voucher / Post-Inspection
  - > Workshops / Onsite Technical Assistance
  - > Water Savings
  - > Next Steps
    - BOR Grant – Program Expansion
- **PWP Simple System – Permitted Systems**
  - > Standard Plan Application
  - > Process



# Greywater Overview

Pasadena Water and Power

Californian's produce around  
1 billion gallons of greywater every day



PASADENA



# Greywater Overview

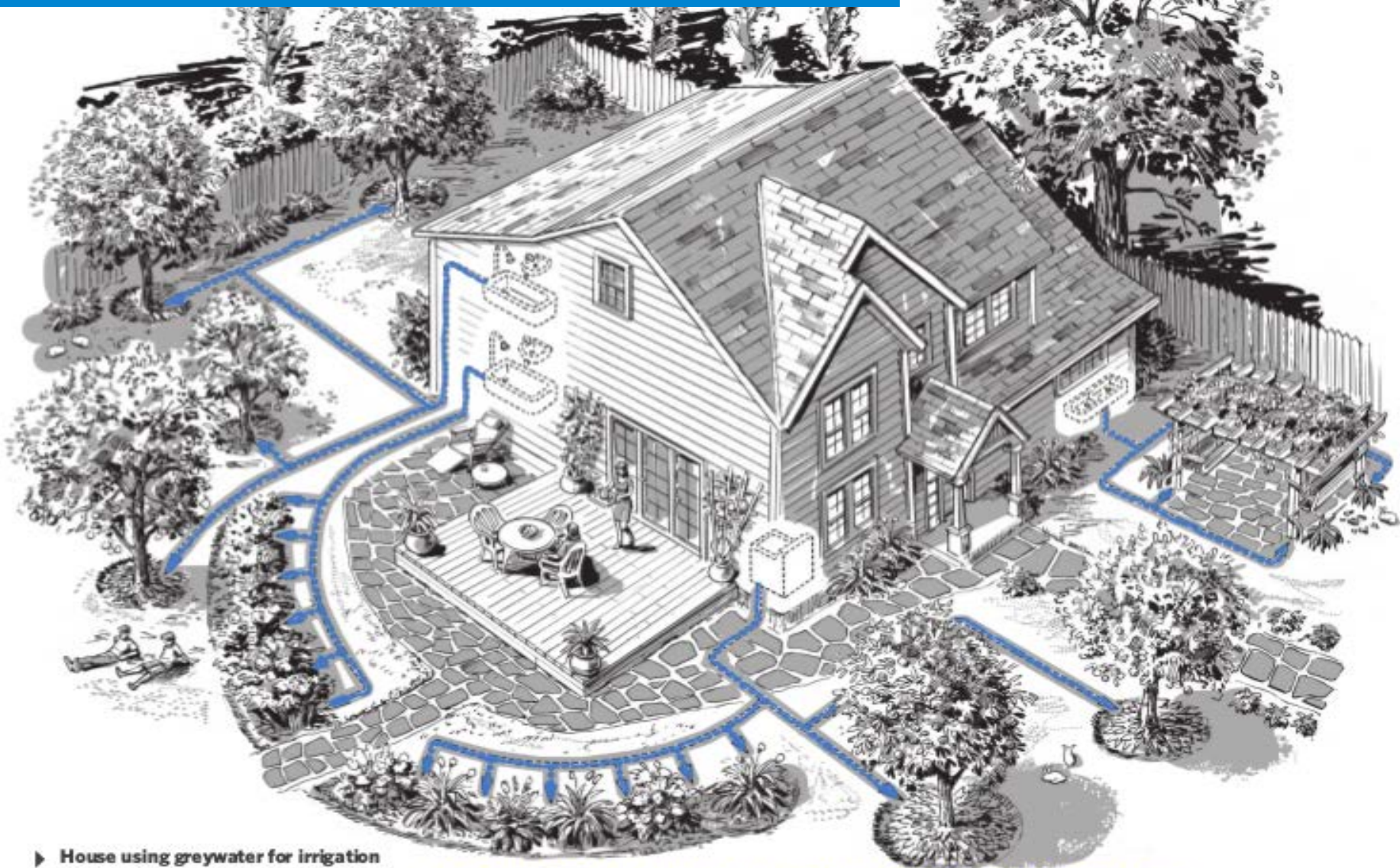
Pasadena Water and Power

- Greywater is water from:
  - > Washing Machines
  - > Showers and Tubs
  - > Bathroom Sinks



# Greywater Reuse

16-40% reduction in water use



► House using greywater for irrigation with simple laundry-to-landscape and gravity-fed systems

© Steve Sanford from The Water-Wise Home



# Greywater Systems in California

Pasadena Water and Power

## Before 2009:

- It was not possible to install a legal system, there were 1.6 million illegal systems in California.

## After 2009:

- It is possible to install several types of systems legally, some don't require a permit.



# PWP Greywater L2L Program

Pasadena Water and Power

- Key Factors for Program Initiation
  - > Sustainability Policy
    - Green City Action Plan
    - Water Integrated Resource Plan
  - > Strong community interest
  - > Council support
  - > Building Official support
  - > Public Health Department support

PASADENA





# PWP Greywater L2L Program

Pasadena Water and Power

- **Key Program Elements**
  - > Partnership with Graywater Action – Laura Allen
  - > Partnership with Local Irrigation Supplier
  - > Training for Customer Service Staff and Managers
  - > Training for Irrigation Supply Store Staff
  - > Launch - Greywater Symposium
  - > Monthly Workshops
  - > Required Workshop Registration
  - > Required Application
  - > Greywater Kit Voucher
  - > On-Site Technical Assistance

PASADENA



# Partnerships- Greywater Action

Pasadena Water and Power

Greywater Action – a collaborative of educators who teach residents and tradespeople about greywater systems

- **Founding Member - Laura Allen**
  - > Author of the San Francisco Graywater Design Guidelines for Outdoor Irrigation
  - > Authored The Water-Wise Home: How to Conserve and Reuse Water in Your Home and Landscape
  - > Worked with Bay Area Agencies

PASADENA



# Partnerships - Landscape Warehouse

Pasadena Water and Power

- Local Irrigation Store – important support for residents installing systems
- Employees will receive Greywater training
- Carries supplies / kits
- Works with PWP to redeem vouchers and track participation



PASADENA



# Trainings

Pasadena Water and Power

- PWP Staff Training
- Customer Service Staff Center Training
- Landscape Warehouse Staff Training
- Building Staff Training - Plans Examiners Training



# Program Launch -Greywater Symposium

Pasadena Water and Power

- Provide overview of greywater systems
- Introduce program launch
- Provide information for general public
- Target workshops to residents committed to install
- 125+ attendees

**Pasadena Water & Power Invites You to Attend a**  
**Greywater 101 Symposium**

Did you know that 12% of waste water produced in a home comes from your washing machine and can be used to water your plants?

**Learn About**

- ✓ What greywater is and the different types of greywater systems
- ✓ Our new laundry-to-landscape (L2L) Greywater Program
- ✓ How to register for greywater installation training workshops
- ✓ Incentives available for residents

**Saturday, August 29<sup>th</sup>**  
**1pm - 3pm**  
Lake Avenue Church · Sky Room  
393 North Lake, Pasadena Ca 91101

**PASADENA Water&Power**  
LEAVING THE COMMUNITY SINCE 1914

To RSVP and for more information please visit:  
[PWPweb.com/greywater](http://PWPweb.com/greywater) or call 626.744.6970

PASADENA



# Process

Pasadena Water and Power

## Register

- Online: Pasadena Citizen Service Center (CSC)
- By Phone



## Apply

- Once registered receive application
- Submit application online/ in-person or by mail



## Staff Reviews Application

- Confirms with registrants

Registrants Attend Workshop



## At Workshop

- Participants Receive Greywater Kit Voucher
- Sign-Up For On-Site Technical Assistance
- Receive List of All Components Needed
- Receive Homeowners Manual



Participants Redeem Voucher at Landscape Warehouse



Resident Installs L2L System

- Staff Confirms Installation

PASADENA



# Application

## Pasadena Water and Power



PASADENA  
Water & Power

MAIL TO: Pasadena Water and Power  
Residential Graywater Program  
150 S. Robles Ave #200  
Pasadena, CA 91101  
E-MAIL: [rsoloyan@cityofpasadena.net](mailto:rsoloyan@cityofpasadena.net)  
WEBSITE: <http://pwpweb.com/graywater>

### Laundry-to-Landscape Graywater Program Application

The City of Pasadena Water and Power is offering Laundry-to-Landscape Graywater Workshops and a Laundry-to-Landscape Graywater Kit to qualifying Laundry-to-Landscape Graywater Program participants. A post-inspection will be required by PWP personnel or its selected vendor to ensure the installation of a Graywater Kit.

**IMPORTANT:** Please read the program rules and guidelines before submitting your application.

#### Applicant Information

Applicant name: [Click here to enter text](#)

Mailing address: [Click here to enter text](#)

City: [Click here to enter text](#) Zip Code: [Click here to enter text](#)

Address where graywater system will be installed: [Click here to enter text](#)  
(If different from mailing address)

Phone number: [Click here to enter text](#) E-mail address: [Click here to enter text](#)

PWP account number (for installation address): [Click here to enter text](#)

Type of property in which graywater system will be installed: [Click here to enter text](#)  
(Single family house, multi-family dwelling, etc.)

#### Laundry-to-Landscape Graywater Program Questionnaire

- Do you have a top or front-loading clothes washing machine?  Top  Front
- Is the washing machine near an exterior wall of the house?  
If not, is there a crawl space that is accessible enough to run the pipe under the house and outside through an air vent?  Yes  No
- Is the irrigation area near the washing machine?  Yes  No
- Do you have a yard that is a level or down sloping from the clothes washer?  Yes  No
- Are you submitting the photo of landscape? (Photo submission of landscape is recommended)  Yes  No
- Do you own the home where you intend to install the laundry-to-landscape system? (If not, you will need to have the owners sign a Property Release form)  Yes  No

- Are you going to water existing plants or new plants?  Existing Plants  
 New Plants
- How many people live in your home? [Click here to enter text](#)
- How many loads of laundry does your household do per week? [Click here to enter text](#)
- Date of workshop attended [Click here to enter a date.](#)



#### Residential Graywater Application: Rules and Requirements

- All rebate applications must be signed by the legal property owner.
- The rebate applicant must comply with all applicable state and local laws pertaining to graywater systems.
- Applicant must complete a laundry-to-landscape educational workshop before receiving the kit. This workshop is offered at no cost to the participant.
- PWP will provide a Graywater Kit to each applicant (one per household) of Laundry-to-Landscape Graywater Program, with some essential parts to install a laundry-to-landscape graywater system, at no cost for applicant. Applicant agrees to purchase all the additional tools, material, and graywater components not provided by PWP to install the graywater system.
- A representative of Pasadena Water and Power or its assigned vendor must be permitted to inspect the property to verify installation and proper construction.
- The components of graywater kit received from PWP must be installed at an existing PWP service address.
- If the graywater system is not installed 90 days after receiving the kit, the Graywater Kit should be returned to PWP with no missing components, or the cost of the kit of \$80 will be added to customer's water bill.
- Installation of the graywater kit components is the sole responsibility of the applicant, as is determination of the adequacy and compatibility of the existing plumbing system.
- The applicant is solely responsible for the proper disposal of all materials associated with the installation of incentivized fixtures and equipment and PWP assumes no responsibility or liability.
- PWP does not endorse specific brands, products or dealers, nor does it guarantee materials or workmanship; acceptance of such is customer's responsibility.
- PWP assumes no responsibility or liability for any damage that may occur to an applicant's property as a result of participation in this program. Due to circumstances beyond its control, PWP cannot guarantee that installation of rebated fixtures or measures will result in lower utility costs.
- PWP may at any time, modify, suspend, or terminate this program without prior notice.
- Funding is limited and kits are available on a first come first serve basis until funds have been depleted or program terminates.
- Incomplete or illegible applications will be denied.

- [PWPweb.com/greywater](http://PWPweb.com/greywater)
- Additional resources
- Future inclusion of simple system permit process

## THE CITY OF PASADENA

### GREYWATER

PWP is leading the way to support innovative ways to conserve water. Using greywater is an important way to reduce potable water use and flows to our sewer system. It provides for an efficient means to irrigate plants in your landscape, and provides natural groundwater recharge. Greywater is water from showers, bath tubs, washing machines, and bathroom sinks. For more information on greywater, see our [Greywater FAQ](#).

To promote the use of greywater in the City, PWP offers a Laundry-to-Landscape (L2L) greywater program. Laundry-to-Landscape (L2L) greywater systems are simple, affordable, and easy to maintain. With your own L2L system you can irrigate your landscape each time you do laundry, saving you water, time, and resources.

The program provides single family residential customers in depth training workshops on how to install a Laundry-to-Landscape greywater system; a greywater voucher providing \$80 towards the cost of the greywater system components; and onsite technical assistance for customers who participate in the program.

### LAUNDRY-TO-LANDSCAPE (L2L) GREYWATER PROGRAM

PWP has partnered with industry expert, Greywater Action, to provide monthly L2L greywater installation training workshops throughout the year, starting in September 2015. Experienced instructors will lead you step-by-step through the design process, tailoring a system to fit your home.

The L2L system is legal to install without a permit, and there are **12 basic guidelines** to follow to comply with California's rules for greywater use, which participants will review at the workshop.

#### How Do I Get Started?

The greywater installation training workshops are open to single-family residential PWP customers:

#### [REGISTER FOR A GREYWATER WORKSHOP HERE](#)

(Under "Request Type" click "Reservation." Then under "Select a Topic" scroll to "Water and Power - Events" and select which L2L Greywater Program Workshop you wish to attend.)

Please note: Workshops are limited to 20 participants. After registering you will receive an email confirmation with an application for the Laundry-to-Landscape (L2L) greywater program.

Please complete the application and submit via email to [greywater@cityofpasadena.net](mailto:greywater@cityofpasadena.net), or mail to the address provided on the application. At the greywater installation training workshop participants will receive a greywater voucher (\$80 value), toward the purchase of greywater system parts. PWP has partnered with Landscape Warehouse in Pasadena to redeem the greywater vouchers and provide assistance for the parts needed to install a laundry-to-landscape greywater system.



\*Once registered you will receive an email confirmation with an application

### ADDITIONAL RESOURCES





# Monthly Workshops

Pasadena Water and Power

- Greywater Training: How to Install A System
- Monthly workshops for 12 months
- Saturdays 9:00-11:00



Pasadena Water & Power Invites You to Attend a  
**Laundry-to-Landscape (L2L)  
Greywater Workshop**

Did you know that 12% of waste water produced in a home comes from your washing machine and can be used to water your plants?

Please arrive by 8:30 am to allow time for parking and check-in

**Saturday,  
October 17<sup>th</sup>  
9am - 11am**

Jackie Robinson Park  
Recreation Center  
1081 N Fair Oaks Ave  
Pasadena, CA 91103

**At the Workshop You Will Learn:**

- ✓ How to design an L2L system for your home and landscape
- ✓ How to build a system. You will create a "mock-up" of a real system with real greywater parts
- ✓ What parts you will need for your home's L2L system
- ✓ How much greywater your system produces and how many plants you can water
- ✓ What soaps and detergents are "greywater friendly"

PASADENA Water & Power  
SERVING THE COMMUNITY SINCE 1914

To RSVP and for more information please visit:  
[PWPweb.com/greywater](http://PWPweb.com/greywater) or call 626.744.6970

PASADENA



# Monthly Workshops

Pasadena Water and Power





# On-Site Technical Assistance

Pasadena Water and Power

- Participants sign-up for technical assistance at workshops
- Graywater Action provides onsite technical assistance 45 -60 minutes
  - > Graywater Action does not install, provides guidance
- On-Site visits scheduled for Saturday and Sunday immediately following Saturday workshop

PASADENA



# Pasadena Water and Power





# Greywater Kit Voucher

Pasadena Water and Power



**Pasadena Water and Power**  
**Laundry-to-Landscape (L2L) Greywater Program Voucher**

**\$80**

**\$80 Redeemable for  
Greywater L2L System Parts at the  
Landscape Warehouse in Pasadena:**

1673 E. Walnut Street  
Pasadena, CA 91106  
(626) 792-3319

M-F: 6:30am-5:30pm  
SAT: 6:30am-4:00pm



**PASADENA**  
**Water&Power**  
SERVING THE COMMUNITY SINCE 1906

 **PASADENA**  
INCORPORATED JUNE 18, 1886

This voucher is available only to Pasadena Water & Power residents who have submitted an application for the Laundry-to-Landscape (L2L) Greywater Program and attended a L2L Greywater Workshop.

This voucher cannot be transferred or copied, and must be presented by the registered attendee of the PWP Greywater L2L Workshop.

PASADENA



# Greywater Kit Voucher

Pasadena Water and Power

- Redeemable for \$80 towards Greywater Kit
- Redeemable at Landscape Warehouse
- Participants receive voucher at workshop
- Vouchers include customer name, date workshop attended, PWP account number, property address
- Vouchers attached to a checklist of all components needed for greywater kit
- Landscape warehouse staff collects vouchers
- Submit vouchers with invoice to PWP

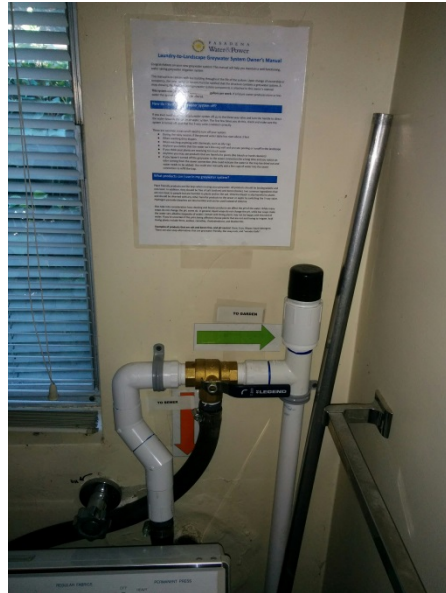
PASADENA



# Confirm Installation

Pasadena Water and Power

- Participants confirm installation of L2L Greywater System with PWP
- PWP verifies installation as needed



PASADENA



# Post Inspections

Pasadena Water and Power



PASADENA





# Water Savings

Pasadena Water and Power

According to U.S. Environmental Protection Agency's (EPA's) Water Sense Program "The average American family uses 320 gallons of water per day, about 30 percent of which is devoted to outdoor uses. More than half of that outdoor water is used for watering lawns and gardens.

- 17,520 gallons or 0.0537 AF water savings per year per household
- 175,200 gallons or 0.537 AF water savings per year from the participation to date
- 4.4 million gallons or 13.5 AF potential water savings per year as a direct result of implementing the program in 250 households

PASADENA



# Next Steps

Pasadena Water and Power

- Utilize the \$100,000 grant funds from the Bureau of Reclamation for the Greywater Program expansion.
- Program expansion to include:
  - > direct installs of L2L systems
  - > HOA participation
  - > incentives for installing Simple Greywater Systems
- Establishing and streamlining the permit process for Simple Greywater Systems
  - > Application - Greywater Standard Plan
  - > Process - webpage with all the relevant information and resources

PASADENA



# Greywater Standard Plan Application

Pasadena Water and Power



## GRAYWATER STANDARD PLAN For Simple Residential System (Based on 2013 California Plumbing Code Chapter 16)

Project Address: \_\_\_\_\_ Permit Number: \_\_\_\_\_

### Scope:

This Plan applies only to simple residential systems meeting all the following criteria:

- Graywater discharge is 250 gallons or less per day;
- The system does not include pumps to distribute graywater;
- The system is not connected to any source of potable water or other irrigation systems; and
- Graywater is immediately discharged into the irrigation field without being stored

### Designer Information:

Name: _____		Phone Number: ( ) - _____	
Address: _____			
City: _____			
State: _____ Zip _____			
<input type="checkbox"/> Homeowner	<input type="checkbox"/> Contractor	<input type="checkbox"/> Engineer/Architect	
	License # _____	License # _____	
	License type: _____	License Type: _____	

### Checklist

Check if provided	Item	Comments (if any)
	Provide a site plan	
	Show the location of the graywater system on the site plan	
	Show the setback distances of graywater irrigation system per Table 1602.4, Page 8	
	Provide a piping riser diagram	
	Provide manufacturer's literature for valves and pipes used	
	Graywater is not connected to any potable water	
	3-way diverter valve is clearly labeled to indicate direction of flow	
	Backwater valve is installed on sewer side of 3-way valve in the horizontal position	
	Drainage piping is sized per current California Plumbing Code (CPC) table for maximum unit loading and maximum length of drainage and vent piping. (The drainage piping per 2013 CPC Table 703.2 is included in this document as a sample. For pipe sizing, please refer to current CPC).	
	Irrigation field sizes are shown on site plan and meet minimum requirements	
	Graywater discharge is minimum of 2" below surface or have 2" minimum mulch cover	
	Graywater is not irrigating edible portion of plants (i.e. no root crops)	
	Groundwater depth is below 3ft. and was checked with a test hole	
	Piping material is indicated on the site plan and on the riser diagram	



## GRAYWATER STANDARD PLAN For Simple Residential System

### 1. Daily Graywater Flow Calculation

- a. Number of bedrooms: \_\_\_\_\_
- b. Number of occupants (1 + number of bedrooms): \_\_\_\_\_
- c. Type of fixtures connected to graywater system (check all that apply)
- Lavatory (bathroom sink)     Shower/bath     Washing machine/washbasin
- d. Daily Graywater flow: \_\_\_\_\_ gallons per day. (shall not exceed 250 gallons)
- Estimate Graywater flow per occupant:  
Any combination of lavatory, shower or bath: 25 gallons per day per occupant  
Laundry (washing machine or washbasin): 15 gallons/day per occupant  
Daily graywater flow example: (4 occupants x 25 gals/day) + (4 occupants x 15 gals/day) = 160 Gallons per day.

### 2. Soil Type (Table 1602.10 on page 10): \_\_\_\_\_

The required setback from slope over 30% is 5 feet  
Laboratory soil test is allowed on flat sites or sites with moderate slopes, less than 30%.  
Written verification of the soil type, from a Professional Civil Engineer, is required for designs involving the following soil types: fine sand, coarse sand or gravel, and if the slopes are over 30%.

### 3. Size of irrigation field

- a. Minimum required irrigation field size: \_\_\_\_\_ square feet
- Minimum irrigation field size: Divide total gallons per day (from step 1d) by the maximum absorption capacity of the soil (step 3).  
Example: 160 gallon/day of graywater in fine sand soil would need 160/4.0 = 40 square feet of irrigation area
- b. Actual irrigation field size provided: \_\_\_\_\_ square feet

### Notes:

1. Pipe shall be labeled "NON-POTABLE WATER, DO NOT DRINK" per Department of Public Health (DPH) guidelines.
2. All valves shall be readily accessible.
3. Installation does not violate other codes or damage the building. Any penetration in the building envelope shall be properly sealed.
4. Only pipes approved for waste shall be used in the plumbing drainage system.
5. Upgrades made to plumbing shall be permitted, and shall comply with the Plumbing Code.

Project Address: \_\_\_\_\_

# PASADENA



# Simple System Greywater Program

## Pasadena Water and Power

### SIMPLE SYSTEM GREYwater PROGRAM

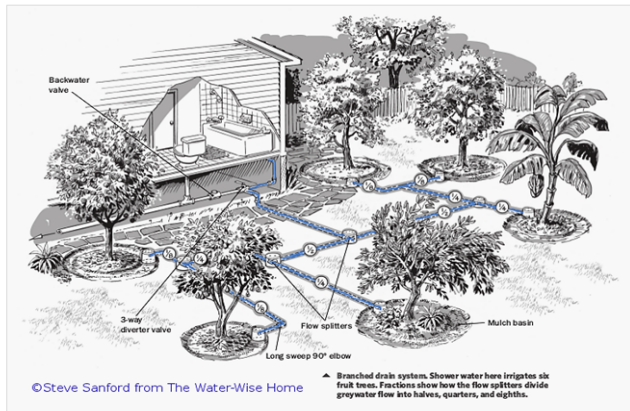
Simple greywater systems exceed a laundry-to-landscape greywater system and have a discharge capacity of 250 gallons per day or less. Simple greywater systems collect water from bathtubs, showers, and bathroom washbasins for irrigation purposes. Simple greywater systems do not include wastewater from toilets, kitchen sinks or dishwashers. Simple greywater systems require a permit, design and inspection by the City of Pasadena Planning and Community Development Department, because construction and installation of simple greywater systems require cutting of the existing plumbing piping. PWP designed a streamlined permit process and a rebate for permit fees to ease the participation in Simple Greywater Program.

#### How Do I Get Started?

The Simple Greywater Program is open to PWP customers. When planning to install a simple greywater system you must follow the 5 basic steps listed below.

#### Step 1: Complete the Greywater Standard Plan Application Package

- Download the Greywater Standard Plan application package [INSERT LINK TO DOWNLOAD HERE](#)
- Complete the application package and submit all the pages of the application package to [greywater@cityofpasadena.net](mailto:greywater@cityofpasadena.net) for initial review prior to obtaining a permit. PWP will review the application package for completeness, and you will be notified if the application needs any additional information.



#### Step 2: Obtain Permit

- After PWP reviews the application for completeness, you are ready to submit the application to the Planning and Community Development Department to obtain a permit before installing the greywater system. The Permit Center is located at 175 N. Garfield Ave in Pasadena, Monday-Thursday 8am to 5pm, and Friday 8am to 12pm. You can submit your application package in person at the permit counter. For more information visit the [Permit Center site](#) or call 626-744-6646.

#### Step 3: Install the System and Schedule a Post Inspection

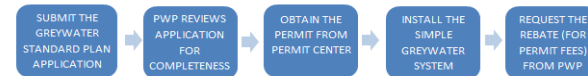
Once you have received your permit you are ready to install the system

- Build the simple greywater system
- Contact the Building and Safety Department at (626)744-4655 to schedule a post inspection. The inspectors will verify that the system conforms to building codes.

#### Step 5: Request the Rebate for the Permit Fees from PWP

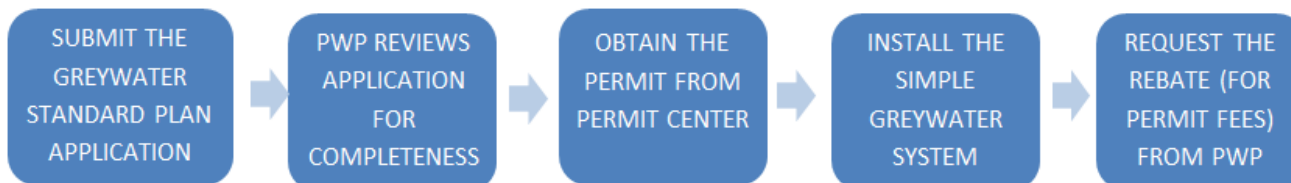
- Submit the copy of the Building final inspection sign-off to [greywater@cityofpasadena.net](mailto:greywater@cityofpasadena.net)
- You will receive a rebate of up to \$200 for your permit fees

If you have any questions about installing a greywater system, please contact PWP at [greywater@cityofpasadena.net](mailto:greywater@cityofpasadena.net)



### ADDITIONAL RESOURCES

- How to install a Laundry-to-Landscape Greywater System
- San Francisco Public Utilities Commission Graywater Design Manual
- Chapter 16A of the 2010 Edition of the California Plumbing Code





Pasadena Water and Power

For more information please contact:

Ursula Schmidt  
Water Conservation Manager  
626-744-3865  
[uschmidt@cityofpasadena.net](mailto:uschmidt@cityofpasadena.net)

Ruzan Soloyan  
Technical Specialist  
626-744-4779  
[rsoloyan@cityofpasadena.net](mailto:rsoloyan@cityofpasadena.net)

