

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



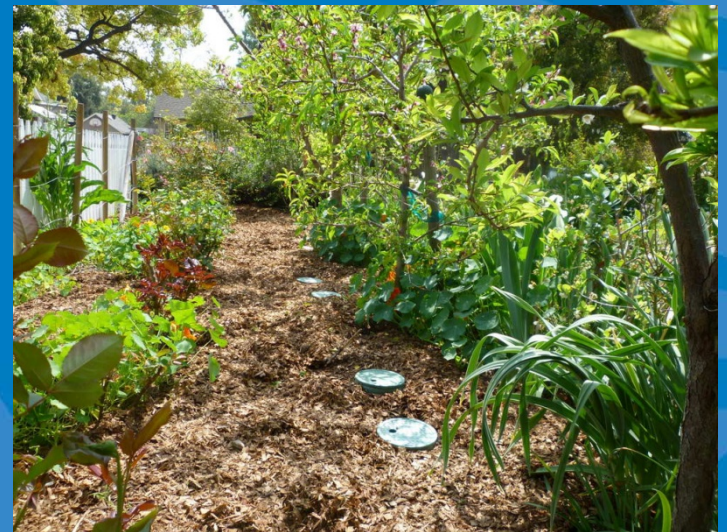


Services of the San Francisco Public Utilities Commission

Launching Residential Graywater Programs

WaterSmart Innovations
October 5, 2011

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Rachel Kraai, SFPUC Wastewater



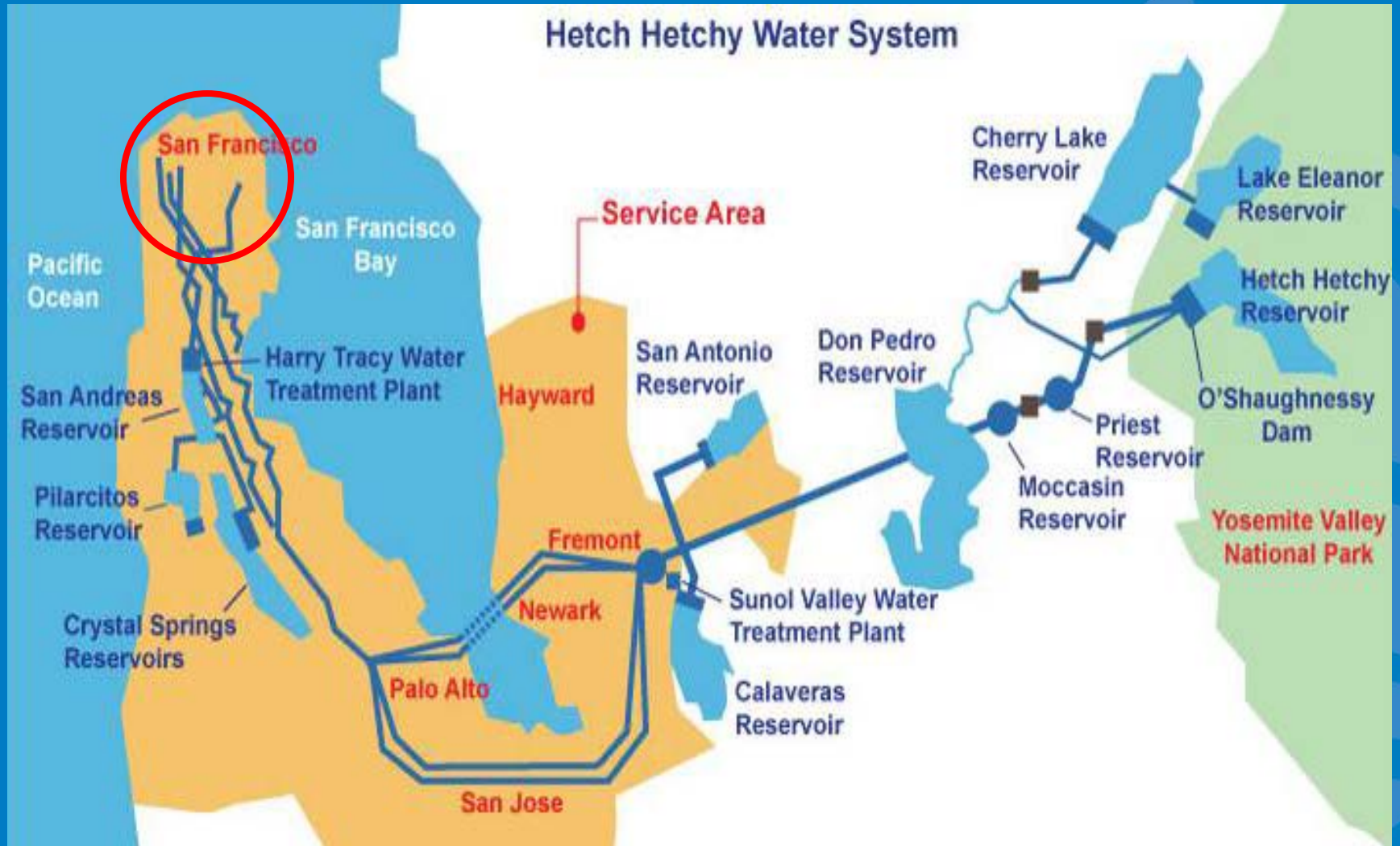


Agenda

- Drivers for Nonpotable Reuse in San Francisco
- Graywater Applications and Approach
- Current Residential Programs
- Challenges and Lessons Learned
- Next Steps



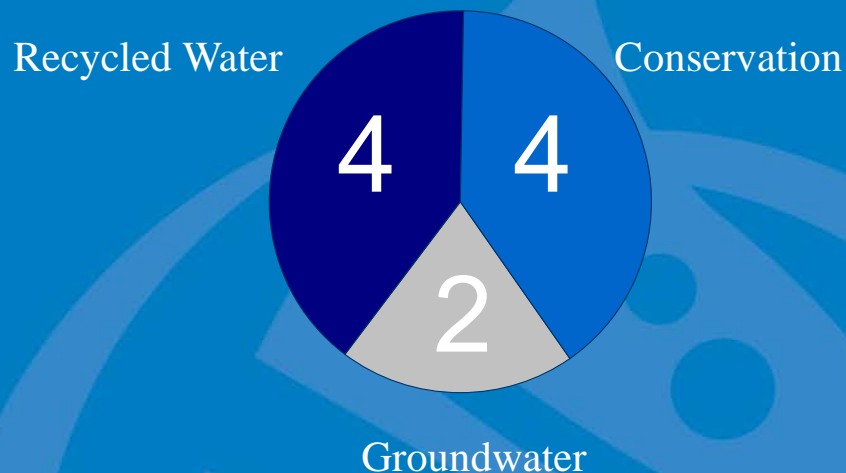
SFPUC Infrastructure Systems



Water Supply Goals

Current Strategies

- Recycled Water (4 mgd)
- Water Conservation (4 mgd)
- Groundwater (2 mgd)



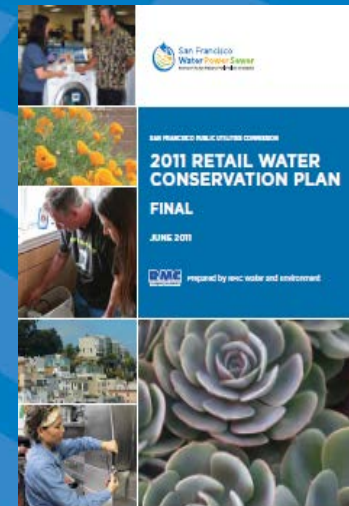
Assess Potential of Onsite Non-Potable Reuse

- Rainwater Harvesting
- Graywater Reuse
- Blackwater Reuse



Graywater Program Drivers

- Aggressive goals for localizing supply
- Research into onsite wastewater re-use
- Changes to the State Plumbing Code
- Engaged stakeholders
- Green building requirements



Graywater Program Approach

- Target simple low tech systems first
- Work with local building inspection and health departments
- Educate customers
- Obtain and evaluate data





Residential Graywater Applications

	Application	Source	System	Permit
Simple	Outdoor Irrigation	Laundry	Laundry to Landscape System	No
	Outdoor Irrigation	Laundry, shower, bathroom sink	Branched-drain System Pumped System Manufactured System	Yes
Complex	Indoor Re-use Toilet Flushing	Laundry, shower, bathroom sink	Toilet Flushing System	Yes



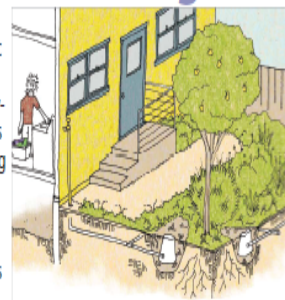
Residential Program Launch

- Graywater Design Manual
- L2L Pilot Program
- Rebates for Permitted Systems
- Outreach and Education

L2L

Laundry-to-Landscape Graywater Pilot Program

The Urban Farmer Store® is helping the San Francisco Public Utilities Commission (SFPUC) conduct a pilot study of laundry-to-landscape graywater systems in San Francisco. We are looking for residents of a single-family home or a two-unit residential building to join our small pilot program. Approved participants will receive a discounted kit,



a free workshop and a comprehensive guidance manual. All you need is a clothes washer, a flat or down-sloping garden and a commitment to saving water!

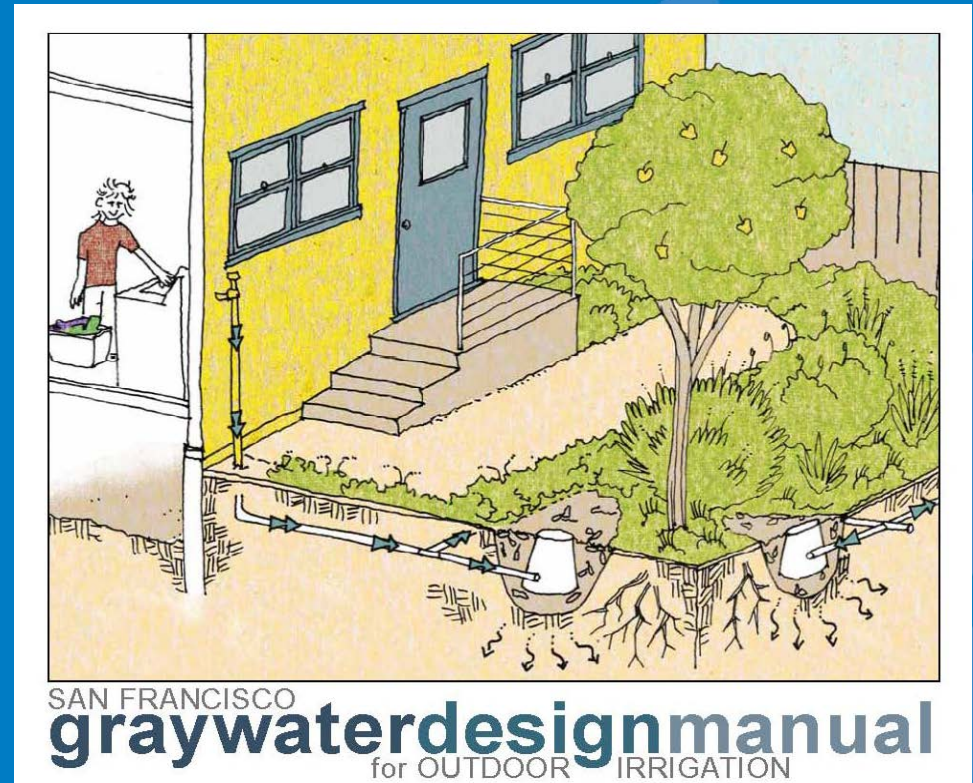
SAN FRANCISCO

graywater design manual

FOR OUTDOOR IRRIGATION

Graywater Design Manual

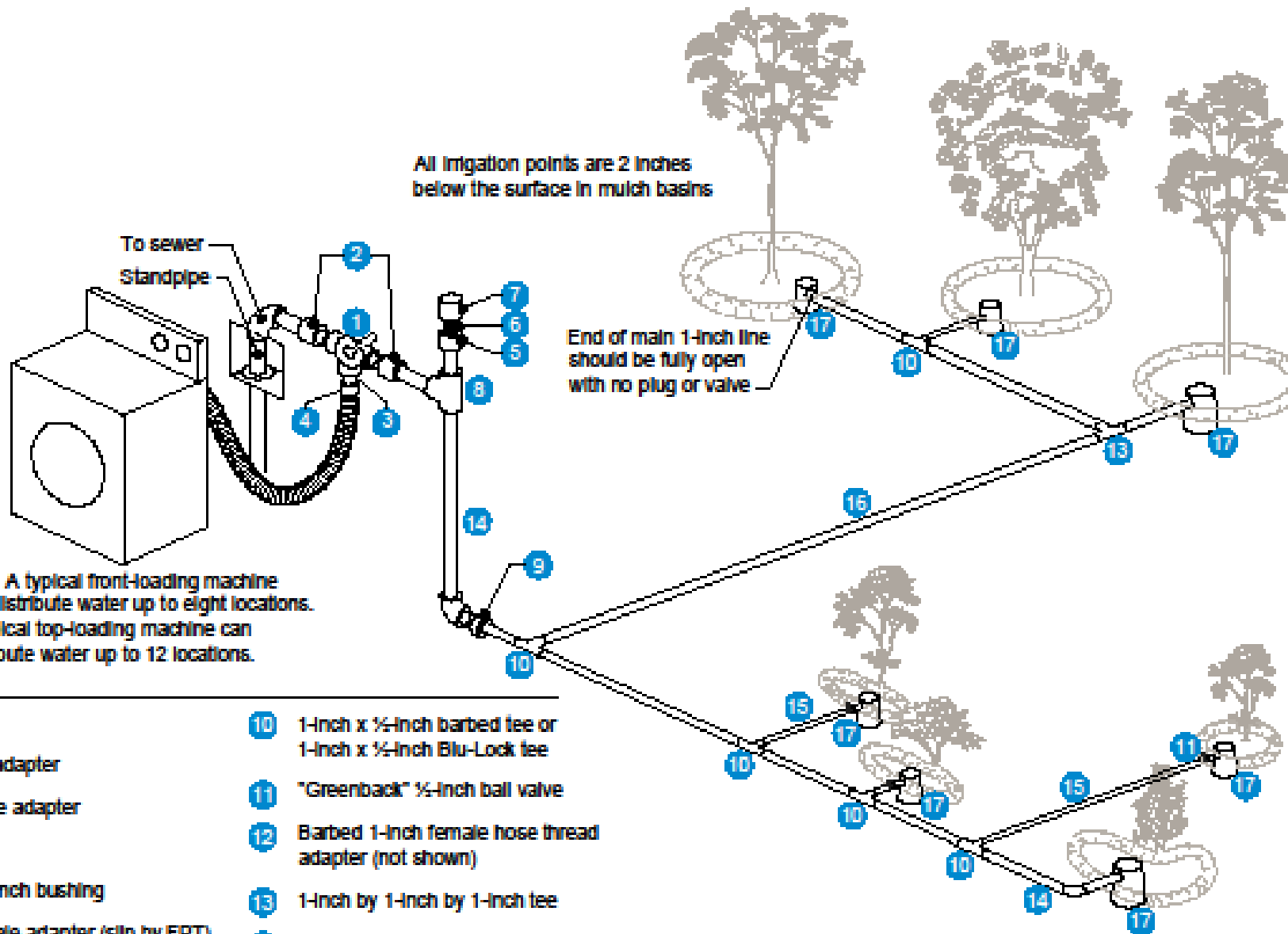
- Collaborative effort: PUC, DPH, DBI & Graywater Experts
- Aimed at residential homeowners and DIY community



Graywater Design Manual

- Site Assessment
- Sizing (Flow Calculations, Soil Analysis)
- System Installation
- Permitting
- System Maintenance
- Graywater Appropriate Plants and Products





All irrigation points are 2 inches below the surface in mulch basins

End of main 1-inch line should be fully open with no plug or valve

Note: A typical front-loading machine can distribute water up to eight locations. A typical top-loading machine can distribute water up to 12 locations.

Legend

- | | |
|---|---|
| <ul style="list-style-type: none"> 1 3-way valve 2 PVC 1-inch male adapter 3 1-inch barbed male adapter 4 Hose clamp 5 PVC 1-inch x 1 1/2-inch bushing 6 PVC 1 1/2-inch female adapter (slip by FPT) 7 Auto vent (or air admittance valve) 8 1-inch PVC tee 9 1-inch barbed x slip adapter | <ul style="list-style-type: none"> 10 1-inch x 1/2-inch barbed tee or 1-inch x 1/2-inch Blu-Lock tee 11 "Greenback" 1/2-inch ball valve 12 Barbed 1-inch female hose thread adapter (not shown) 13 1-inch by 1-inch by 1-inch tee 14 1-inch schedule 40 PVC pipe 15 1/2-inch poly tubing 16 1-inch HDPE tubing 17 Mulch basin |
|---|---|



Laundry-to-Landscape (L2L) Pilot

Purpose


- Assess feasibility, collect data

1 and 2-unit homes

- \$95 subsidy toward purchase of kits
- Free training, manual, tech support
- Free tool lending

Requirements

- San Francisco resident, active account
- Working laundry machine
- Flat or down sloping yard
- Install within 60 days
- Access for inspection
- Participation in survey



SAN FRANCISCO PUBLIC UTILITIES COMMISSION
Laundry-to-Landscape Pilot Program
Application and Guidelines Page 1 of 2

The SFPUC is offering a laundry-to-landscape graywater kit at a subsidized cost to qualifying Laundry-to-Landscape Program participants.
IMPORTANT: Please read the program rules and guidelines before submitting your application.

SFPUC USE ONLY: _____

MAIL TO: The Urban Farmer Store
 Laundry-to-Landscape Pilot Program
 2833 Vicente St.
 San Francisco, CA 94116

PHONE: (415) 661-2204
EMAIL: info@urbanfarmerstore.com

Account Information

Name on SFPUC Water Account _____ SFPUC 10-digit Account # _____

Installation Address _____

Type of Property at which System will be Installed (Single-Family House or Two-Unit Residential Building) _____

Year Building Built _____ # of Units _____ # of Bedrooms _____

Applicant Information

First Name _____ Last Name _____

Are you the SFPUC account holder? If not, please note your relationship to the account holder (i.e. tenant). _____

Daytime Phone Number _____ Email _____

Laundry-to-Landscape Pilot Program Questionnaire

1. Do you have a working clothes washing machine? Photo submission of washer required. Yes No

2. Do you have a yard that is level or downsloping from the clothes washer? Photo submission of landscape required. Yes No

3. Do you own the home where you intend to install the laundry-to-landscape system? (If not, you will need to have the owner sign a Property Release form) Yes No

4. How many people live in your home? _____

5. Do you have a top or front-loading clothes washing machine? _____

6. How many loads of laundry does your household do per week? _____

How Did You Find Out About The Program? CHECK ALL THAT APPLY

SFPUC Website Community Event Referral from Family /Friend Urban Farmer Store

Community Event Website: _____ Other: _____

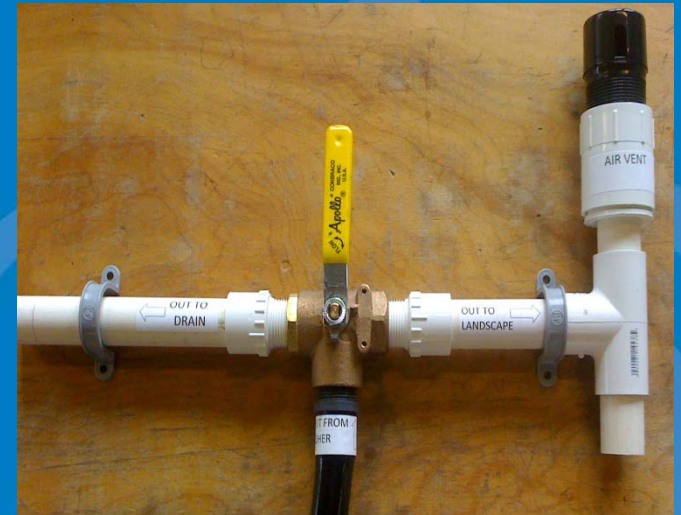
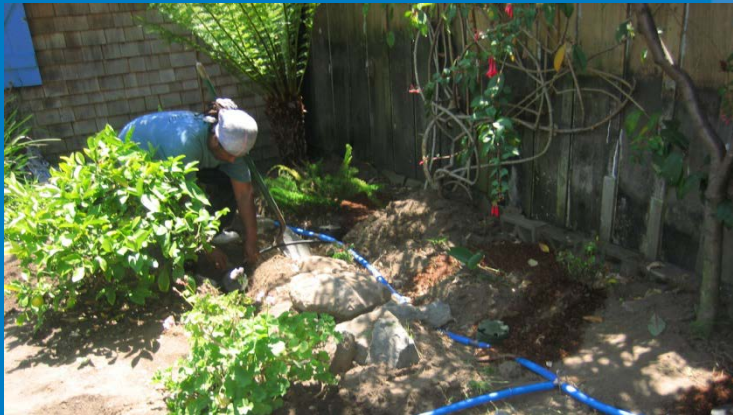
Expires December 31, 2011

L2L Process

- Vendor sells kits, conducts workshops, processes applications, and helps market
- Our staff markets, inspects, surveys, analyzes data, and addresses questions
- Between March – Sept 2011
 - Approved over 50 applications
 - Conducted 5 training workshops
 - Sold over 22 kits
 - Issued surveys to customers
 - Analyzing data

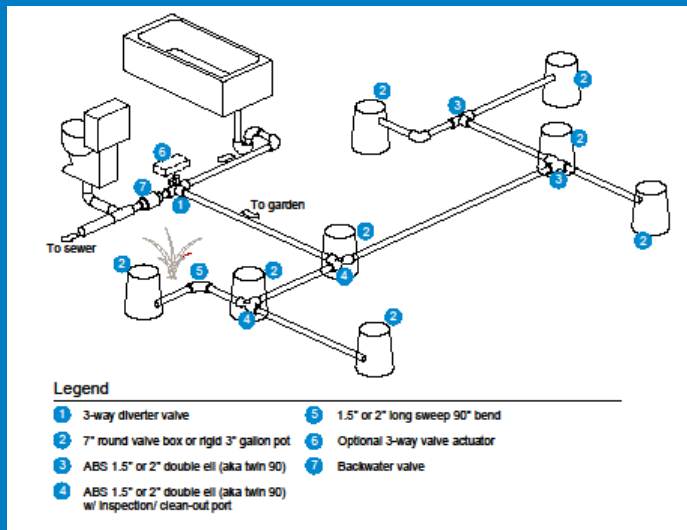


- Include system components
 - 3-way valve
 - Adaptors
 - Pipe
 - Clamps
 - Straps, anchors, other parts
 - Tool lending system



Rebates for Permitted Systems

Up to \$225 rebate off permit fees for more complex residential graywater systems used for subsurface irrigation



Residential Graywater Permit Rebate Application

SFPUC USE ONLY: _____

MAIL TO: San Francisco Water Power Sewer
Water Conservation Section
Residential Graywater Permit Rebate
1145 Market Street, 4th Fl
San Francisco, CA 94103

PHONE: (415) 681-4730
EMAIL: waterconservation@sfwater.org
WEBSITE: <http://conservation.sfwater.org>

San Francisco Water Power Sewer is offering up to \$225 to help cover the cost of obtaining a permit from the Department of Building Inspections (DBI) for the installation of a graywater system in a residential unit. The graywater system must be used for subsurface irrigation only. For a complete list of the fees associated with installing a graywater system in a residential unit in San Francisco, please refer to Table 14-C of DBI's Plumbing/Mechanical Issuance and Inspection Fees at www.sfgov.org/dbi.

Account Information

Name on Water Account _____ 10-digit Water Service Account # _____

Property or Installation Address _____

Type of Property in Which Graywater System is Installed (E.G. Single-Family House, Multi-Family Dwelling, Etc.) _____

Permit # _____ Total Cost of Permit(s) _____ Year Building Built _____

Applicant Information

First Name _____ Last Name _____

- Workshops
- Outreach Materials
- Media
- Tabling Events



SFPUC encourages 'laundry to landscape' water use by residents
By Examiner Staff Writer | 05/08/11 10:00 PM



Challenges & Lessons Learned

- Need patience; grows slowly
- L2L requirements
 - Site conditions: slopes, lot size, irrigation needs
 - Limitation to 1- and 2-unit homes
- Education and assistance
- Water savings



Residential Program Next Steps

- Expand education and outreach
- Develop new workshop model
- Survey L2L participants
- Analyze water savings
- Assess program success



Larger Program Direction

- Assess opportunities for commercial programs
- Develop local standards, protocol, and education materials for commercial graywater use
- Participate in state and national policy development



Image: www.transbaycenter.org



Any Questions?

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