

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com

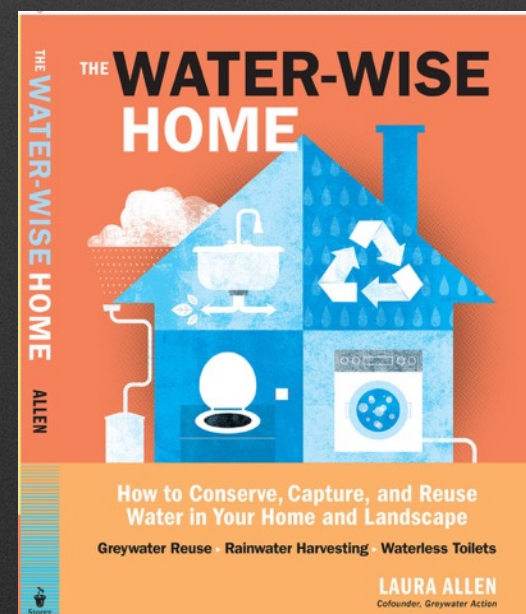


The Next Water-Wise Home

Reusing Wastewater:
From Greywater to Blackwater and Composting Toilets



Laura Allen
Greywater Action



Water Use in the Home and Landscape

San Francisco- 44
gpcd

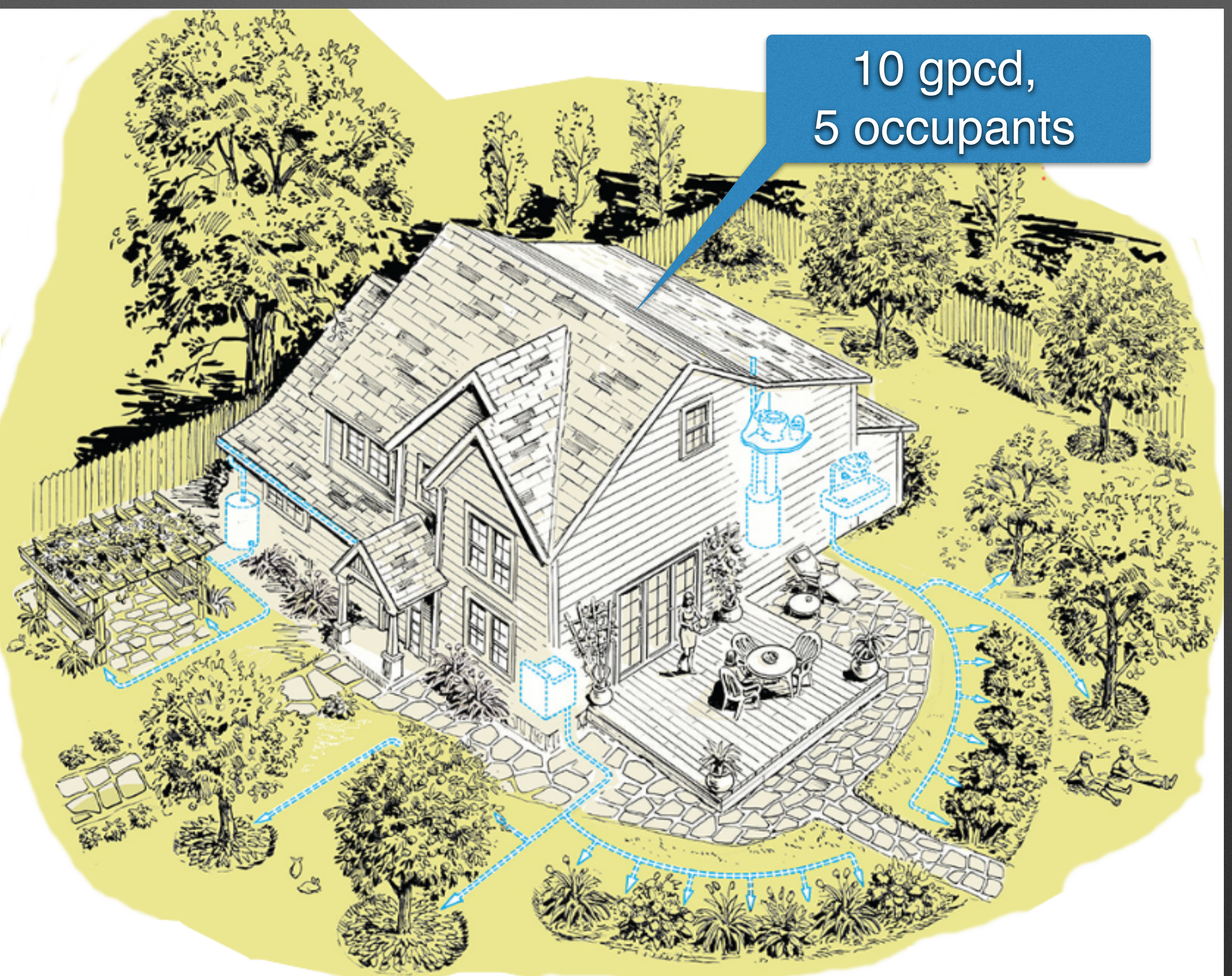
Sacramento- 96
gpcd

Beverly Hills- 162
gpcd

Coachella Valley 282
gpcd

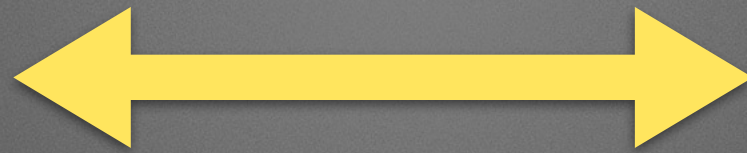


10 gpcd,
5 occupants





this.... or this...?



Greywater Reuse

16-40% reduction in water use



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

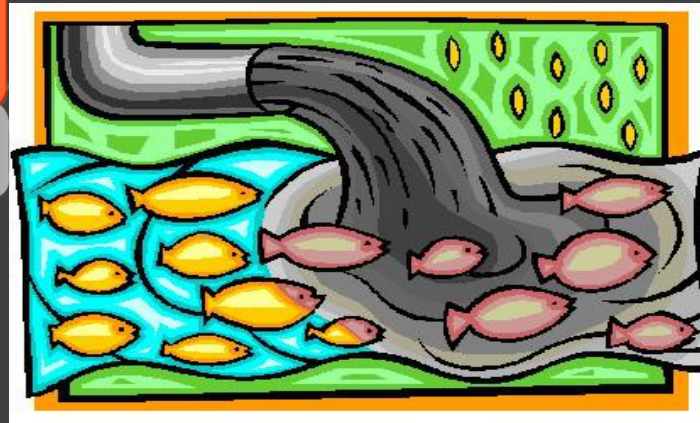
© Steve Sanford from The Water-Wise Home

GWA Study:
per capita savings of 17 gpd

Greywater vs. Blackwater (vs. Dark Greywater)



Greywater is NOT Potable



Use Plant Friendly Products

These products don't contain high SALT, BORON, or CHLORINE.

Don't use sodium based water softened water.



Greywater Systems can be Simple or High-Tech

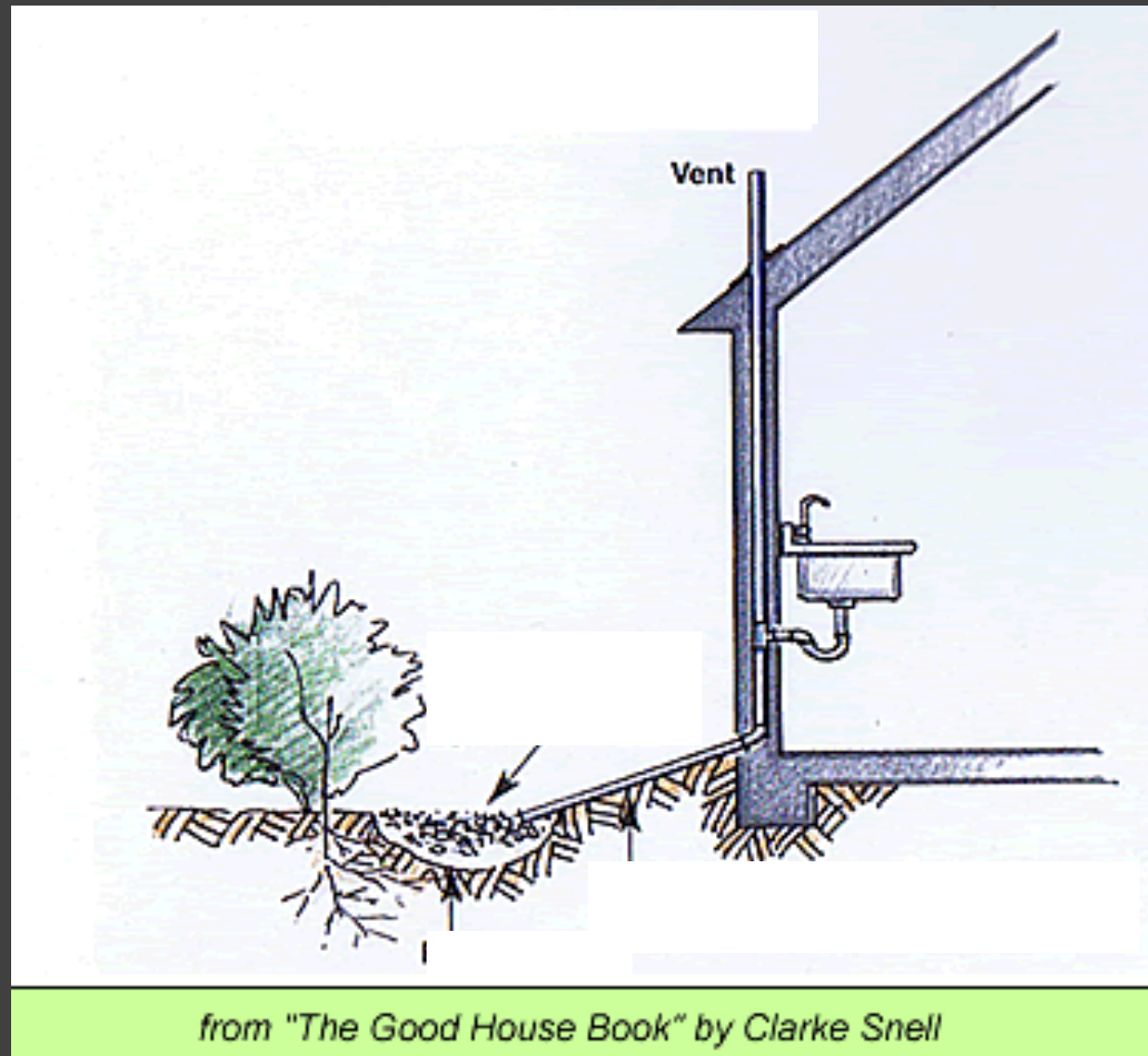
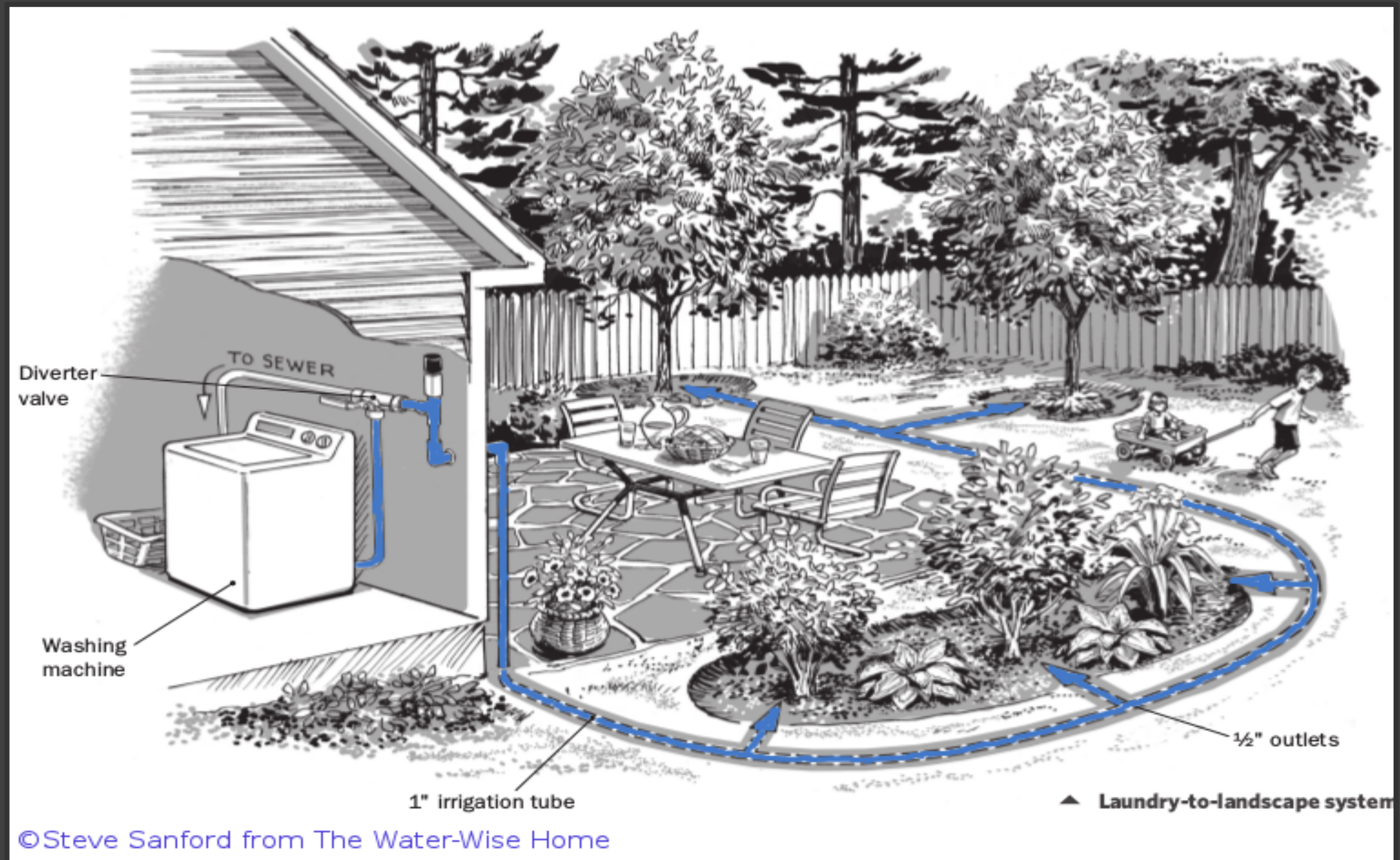


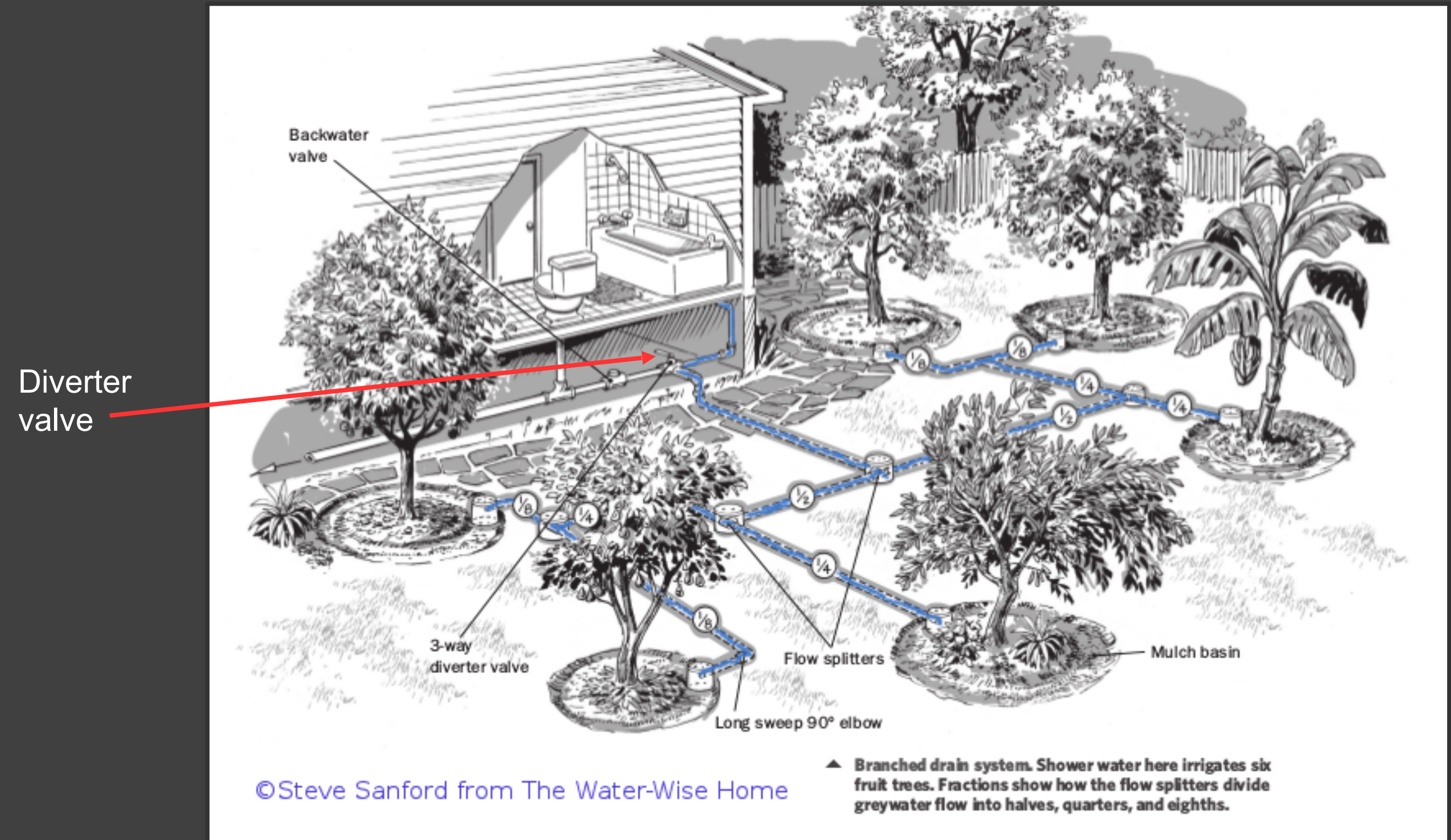
Image Water Sprout

Simple System: Laundry-to-Landscape (L2L)



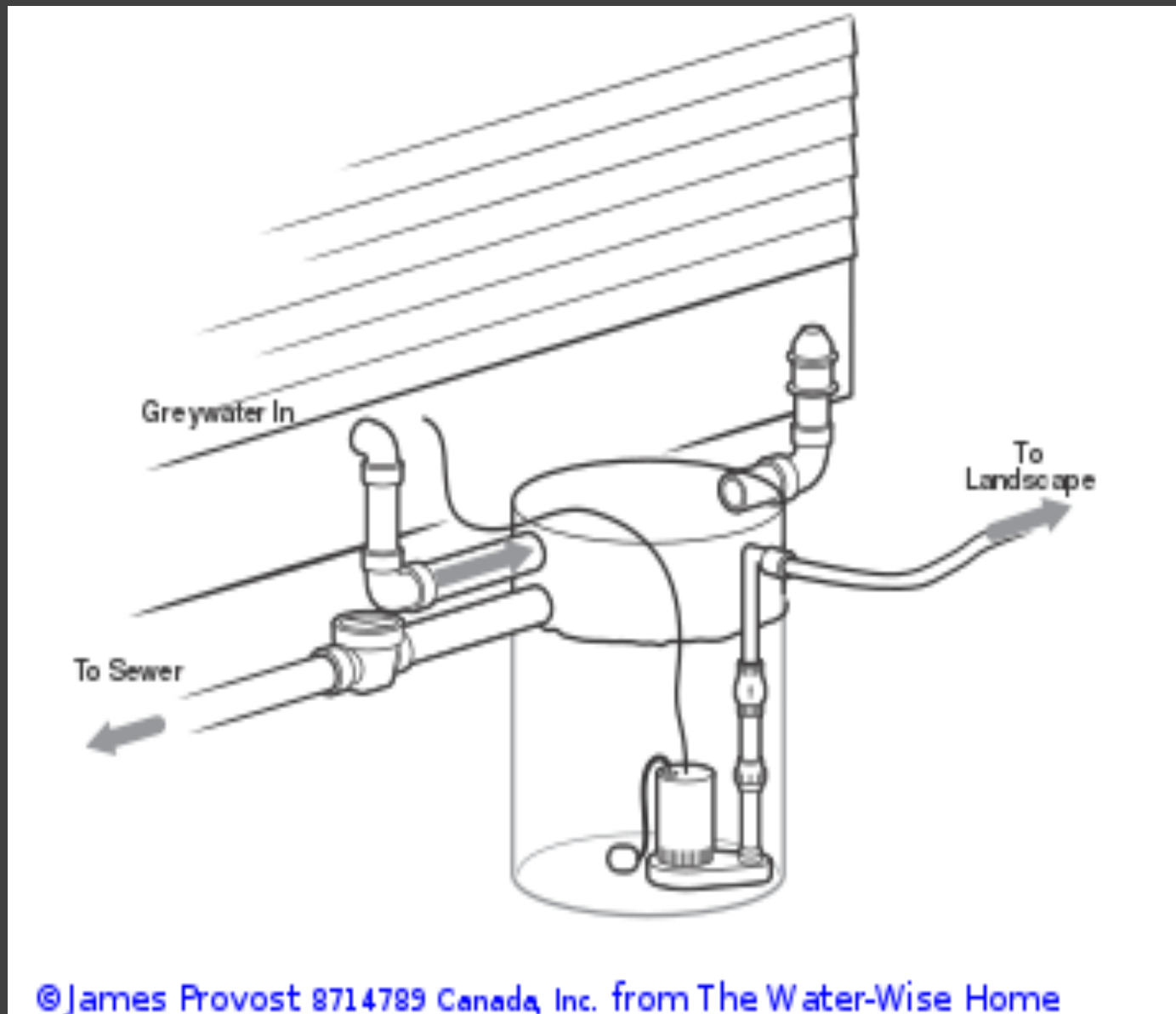
Costs: \$150-\$250 parts, \$700-\$2,500 professional installation

Branched Drain: A Gravity System



Costs: \$250-\$500 parts, \$800-\$4,000 professional installation (permit fees cost more)

Pumped System



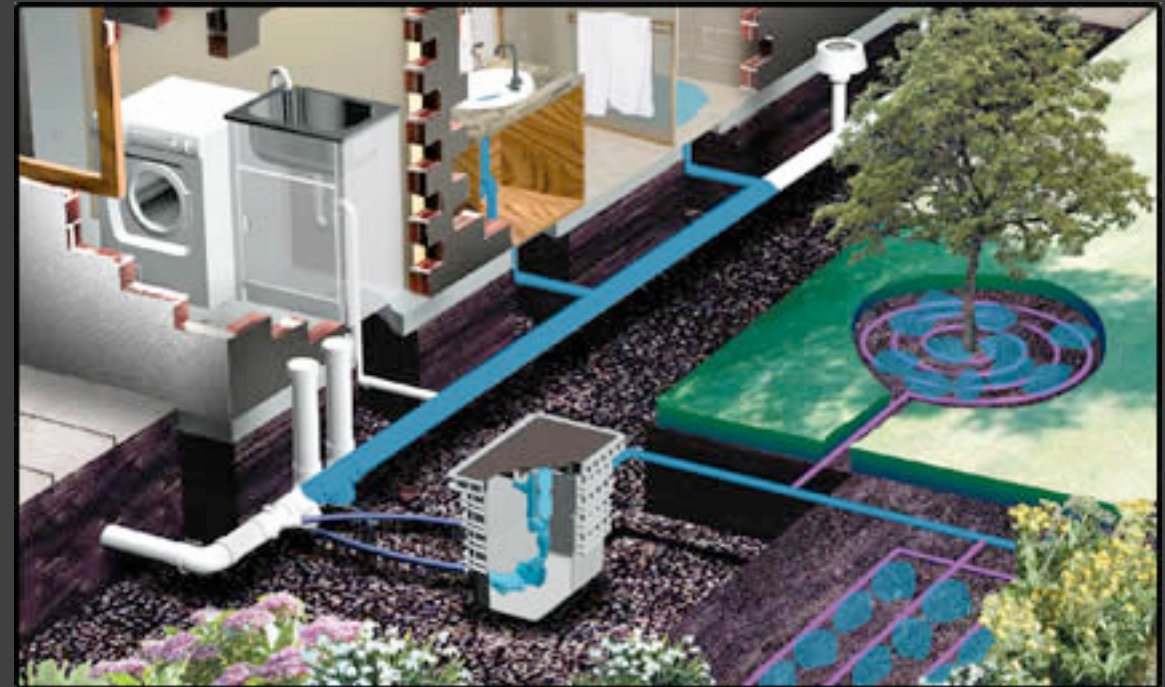
- A diverter valve directs GW to a tank
- Unfiltered GW is pumped out to the landscape with 1" tubing and 1/2" outlets
- System requires an outlet and uses electricity
- Requires a rigorous permitting process

Pump and Filter System for Drip Irrigation



IrriGRay System: Filters must be cleaned manually and require frequent maintenance

Image: Leigh Jerrard



GreyFlow PS System

Note: Filtered GW requires special drip tubing and is not compatible with most standard drip systems.

New Construction and High-End Residential



Nexus E-Water



Image: watersprout.org

“Dark Greywater” Kitchen Sinks



**260 MGD in CA from
residential kitchen sinks and dishwashers**

Who Regulates Greywater?

California

Regulations in the
plumbing code



Building Department

“Authority Having
Jurisdiction”

+

Env. Health Dept. ?

+

Public Health ?

Arizona/Oregon

Dept. of Environmental
Quality

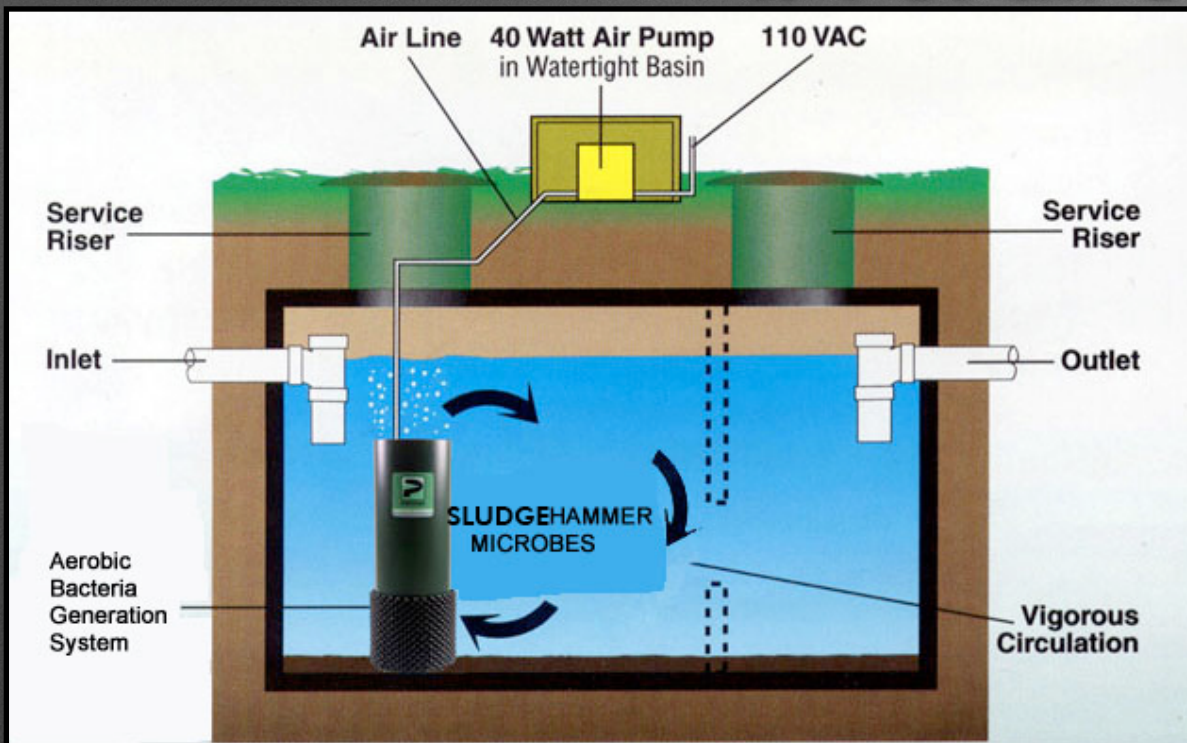
Washington

Department of Health

Irrigation with Treated Septic Effluent

1.2 million on-site systems in CA

~1/4 of all US home ~26 million



Site in New Mexico
Family uses: ~20gpcd
10,000 sq. ft landscape
~1/3 irrigated with septic
effluent (the rest with
rainwater)



Image credit: Jeremiah Kidd of San Isidro Permaculture

**Reusing wastewater
vs.**

Not producing wastewater

Composting Toilet Code: Iapmo's Green Supplement 2015

December 2014

Recode Draft Plumbing Code for Composting and Urine Diversion Toilets

Editor

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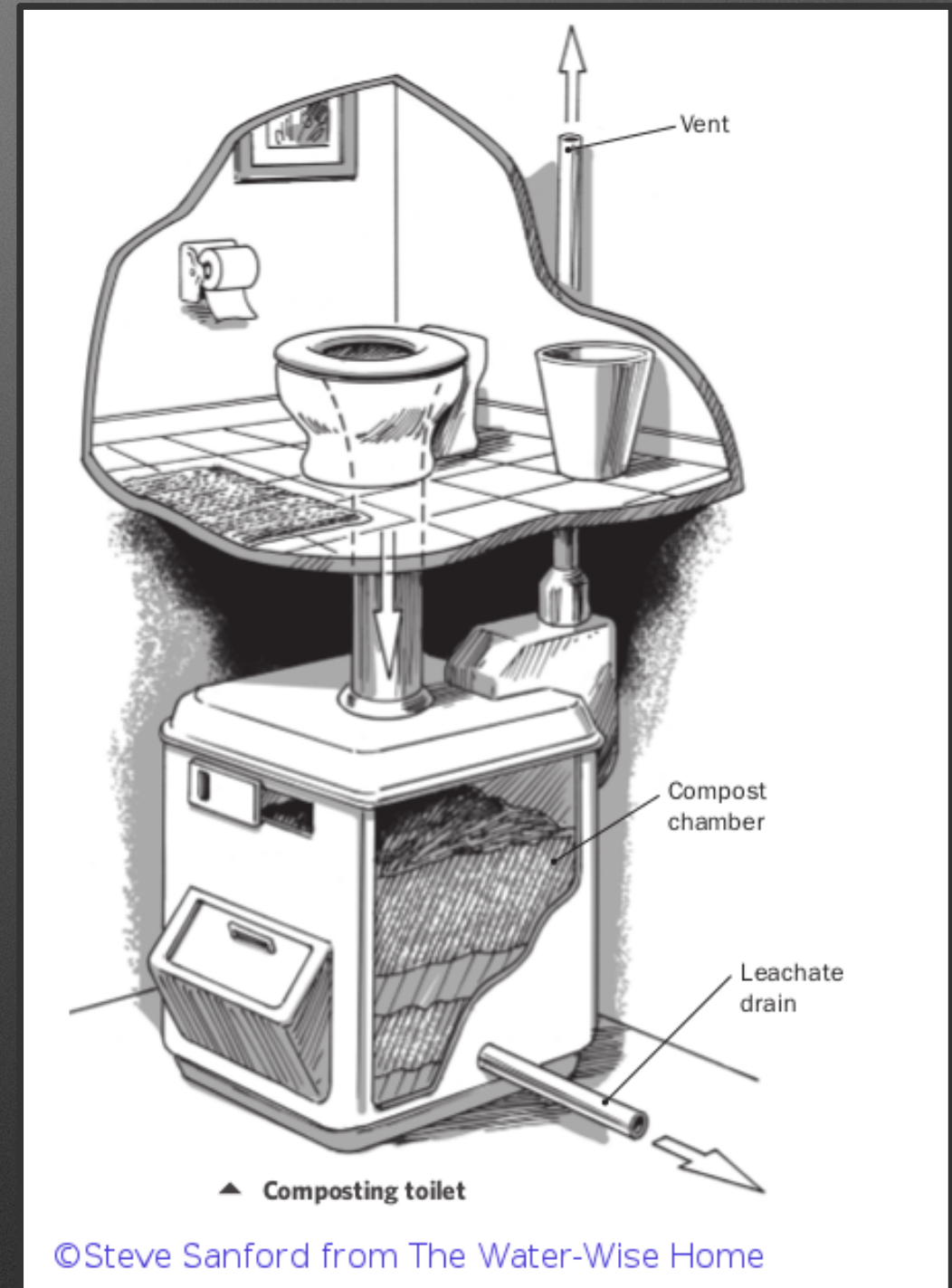
Molly Danielsson recodeoregon.org



**Benefits: Water savings and nitrogen reduction of ~90%
for a fraction of the cost of advanced septic systems.**

Health and Safety

- Performance code
- Prescriptive guidelines for enclosure, screening, and retention time to protect public health.
- Innovation: Toilets either NSF certified or send finished compost to lab for verification of effective composting.



Composting Toilet



San Jose Env. Innovations Center





Bullitt Center

Seattle, WA



Photo by Nic Lehoux



Phoenix composting toilets

Little House (SF)



Only uses rainwater (a potable RW system), reuses all greywater (even kitchen), uses a composting toilet

Needs:

CA State Level Change

- **Redefine greywater** as “greywater” and “dark greywater” *Health and Safety Code Section 17922.12*
- **Reasonable regulations for on-site wastewater reuse** (treated septic effluent and treated blackwater). Title 22 is a current barrier.
- **Further refinement of greywater code** to encourage safe reuse

Needs:

City and County Level Change

- Remove outdated ordinances
- Ordinances to remove permit requirements from the safest, simplest systems (which is allowed by state code, but not applied most places other than the L2L system)
- Ordinances to require “greywater-ready” buildings for new construction and remodels
- Incentives and education for the public

DRAFT- Graywater-Ready Buildings: Model Ordinance



Unified Policy for Permit Exempt Graywater Systems under the California Plumbing Code

*Santa Barbara County Building Departments
in consultation with Environmental Health, Water Purveyors, and local experts*

DRAFT 10/4/2015 Larry Fay and Art Ludwig

[question: should we write this for SB County or CA? The majority of the whereases below came originally from the governor's drought declaration and were restated here to apply to SB only. Now I'm wondering if it shouldn't just be left as California).

WHEREAS On May 5, 2015, the Santa Barbara City Council declared a Stage Three Drought Condition in response to the driest consecutive four years on record; and

WHEREAS in each year of the current drought, water income has been significantly below the amount needed to fill Santa Barbara's reservoir system and groundwater; and

WHEREAS the water deficits in each year of the current drought have put Santa Barbara County further and further behind in meeting its essential water needs; and

WHEREAS there is no way to know when the drought will end, further urgent action is needed to address the water shortage and protect the people and property in Santa Barbara County; and

WHEREAS the Governor of California has issued multiple successive Executive Orders proclaiming a statewide drought, and ordering water districts to take action to meet deep conservation goals, specifically including accelerated use of technologies such as onsite reuse systems; and

WHEREAS as of September, 2015, storage in Lake Cachuma, the County's main water reservoir, is at 17% of capacity, and groundwater levels are falling; and

WHEREAS State Water Project water allocations have been reduced to between 0 and 15 percent of requested deliveries, matching 1991 as the lowest water allocation year in State Water Project history, and Central Valley Project water allocations for agricultural users have now been reduced to zero; and

WHEREAS the lack of water has forced local communities to draw water from their emergency water reserves, putting communities at risk of further catastrophe if emergency reserves are depleted or cut off;

By The Decentralized Water Policy Council

October, 2015

Thank you!



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The Water-Wise Home