

INSTALLING A LAUNDRY-TO- LANDSCAPE (L₂L) GREYWATER SYSTEM

Virtual Field Studies | Watershed Management Group

Presenter: Madeline Ryder, *Project Manager*



watershedmg.org/learn/classes/field-studies

Register for upcoming Living Lab Field Studies sessions

Virtual Field Studies Class: How to Install a Laundry-to-Landscape Greywater System

05/27/2020 - 5:00pm to 7:00pm

Virtual Field Studies Class: Cultivating Native Edible Landscapes

06/02/2020 - 5:30pm to 7:00pm

LAST ONE, BEST ONE!

watershedmg.org/advocacy/steward-in-place



Steward In Place: The Tippy Tap



Steward In Place: How to Create Garden Soil from Sheet Mulching



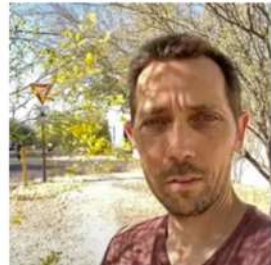
Steward In Place: Trevor on Arundo Donax



Steward In Place: Trevor on Buffelgrass



Steward In Place: Trevor on the Stinknet Plant



Steward In Place: Pruning right-of-way trees in your neighborhood



Steward In Place: Composting Toilet Maintenance



Steward In Place: A Look At Large-Scale Green Infrastructure with Joaquin



Steward In Place: Earth Day 2020 - Invasive Species



Steward In Place: A Day in the Life of a Composting Toilet User



Steward In Place: A Day In The Life: Restoration Team

Water Harvesting Virtual Appointment

watershedmg.org/article/ask-water-harvesting-specialist-virtual-appointment

NEW!

- \$30 for 30 minutes.
- Make the most of your time at home and dive into some water harvesting projects with the help of WMG's water harvesting specialists!
- Speak with our staff to answer questions about designing, building, and maintaining water harvesting systems and native and edible landscapes.

Composting Toilet Kits



- \$755 cost includes assembled kit and training

watershedmg.org/services/home



Laundry-to-Landscape (L2L) Greywater

- Indoor/diversion kit: \$190
- Outdoor/distribution kit: \$157 (poly) or \$188 (PVC)
- Cost includes assembled kit and training
- Reserve your kit today!

Today's topics

INTRODUCTION

GREYWATER OVERVIEW AND PRINCIPLES

L2L SYSTEM OVERVIEW

CASE STUDIES

UPKEEP

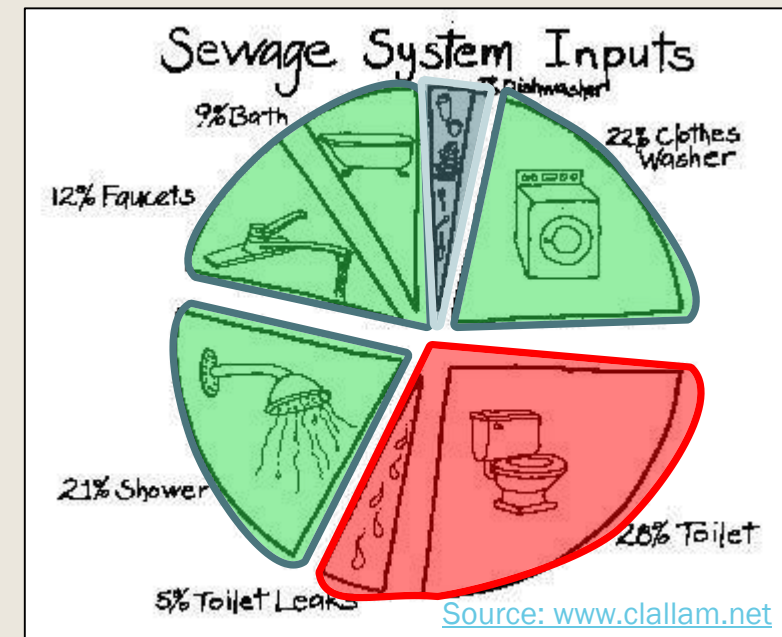
Q&A



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GREYWATER

- Any water that has already been used and is then *redirected to landscape plants*
- Bathroom shower, bath, or sinks; laundry; AC condensate
 - (*Kitchen sinks are currently not accepted as a greywater source in Tucson*)
- No flush water from toilets



Branched drain: bathroom sink/shower

- Gravity-fed; sloped for flow
- Open-ended pipe
 - *Infiltration chamber if necessary*
- Shower: 1.5 – 2 gal/min





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Branched drain: outdoor sink/shower

- Gravity-fed
- Pipe or earthworks
- Shower: 1.5 – 2 gal/min

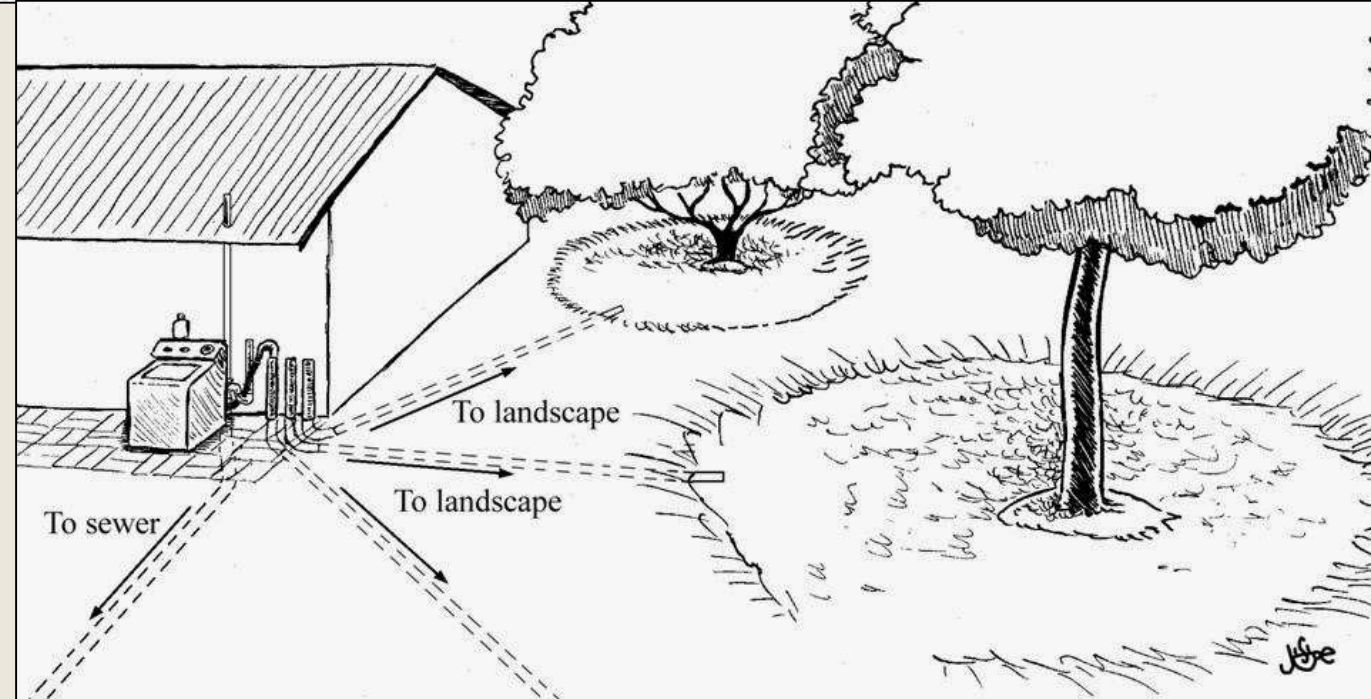
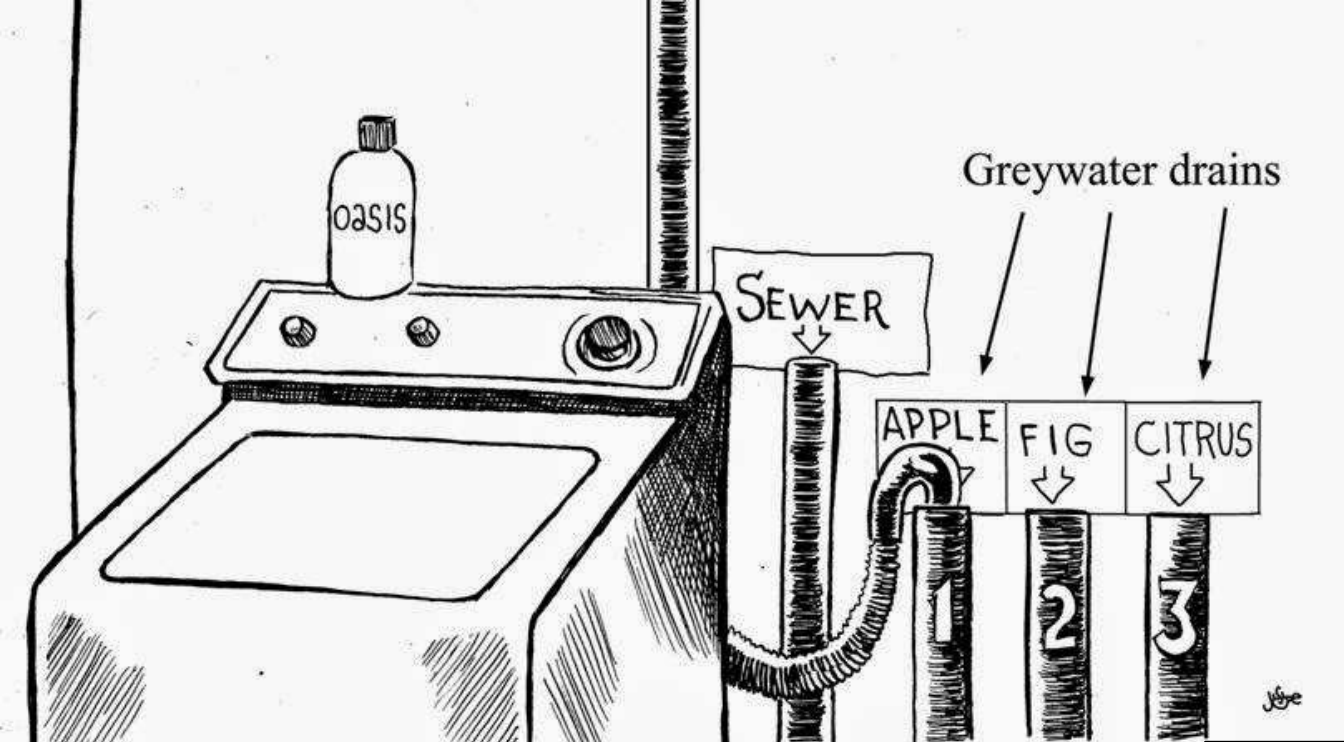


Branched drain: laundry washer

- Gravity-fed
- Individual pipes for areas/plants
- Manual changes
- Top loader: 30 – 40 gal/load
- Front loader: 15 – 20 gal/load



Lincoln Perino



Art Ludwig

Laundry to Landscape

Clean your clothes and water a fruit grove.

Sending washing machine water – commonly known as greywater – to your landscape is one of the easiest ways to repurpose used water in your household. The laundry to landscape system relies on the washing machine pump to distribute water up to 100 feet from the machine out to your landscape. The flow can be split up to eight times to distribute greywater around your garden. With some simple plumbing modifications, you can save thousands of gallons of water a year in irrigation and grow fruit trees guilt free.

Lave su Ropa y Riegue sus Frutales

Mandando el agua de la lavadora – comúnmente conocida como agua gris – al patio es una de las formas más fáciles de re-usar el agua de su casa. El sistema de lavadora al patio utiliza la bomba de la lavadora para distribuir el agua hasta 100 pies desde la lavadora al patio. Se pueden instalar hasta 8 goteros para distribuir el agua en el jardín. Con unas pequeñas modificaciones de plomería, se pueden ahorrar miles de galones de agua al año en irrigación de árboles frutales.



- 1 Laundry detergent** must be low in sodium and have no borax or bleach.
Detergente debe ser de bajo sodio y no aditivos de cloro o boro
- 2 Washing machine pump**
Lavadora
- 3 Diversion** option to safely send your laundry water back to sewer when needed, especially when using bleach or other harsh detergents.
Desviación opción para enviar de manera segura el agua de la lavadora al drenaje cuando sea necesario, especialmente cuando se usa cloro u otros detergentes agresivos
- 4 One-way air vent** to prevent a siphon from forming.
Ventilador contra corriente para prevenir que se forme un sifón
- 5 Transition** from PVC tubing to flexible poly tubing.
Transición de PVC pulgada a manguera negra flexible pulgada
- 6 Outlets with valves** to control amount of flow each plant receives.
Goteros con válvula para controlar el flujo para cada planta
- 7 Mulched basin** to collect greywater & rainwater.
Cuenca con acolchado para coleccionar agua gris y agua de lluvia
- 8 Thirsty fruit tree**
Árbol frutal

Laundry-to-Landscape (L2L)

- Relies on washer pump for dispersal
- Specifics for distribution to accommodate pressure
- Top loader: 30 – 40 gal/load
- Front loader: 15 – 20 gal/load

BLACKWATER

- Flush water from toilets, which cannot be used in the landscape
- Consider a composting toilet!

Soaps and detergents

- Avoid sodium
 - *Oasis* or *BioPac* recommended
 - *Dr. Bronner's* (contains sodium, but anecdotally successful)
- NO bleach, chlorine, boron, human/organic wastes

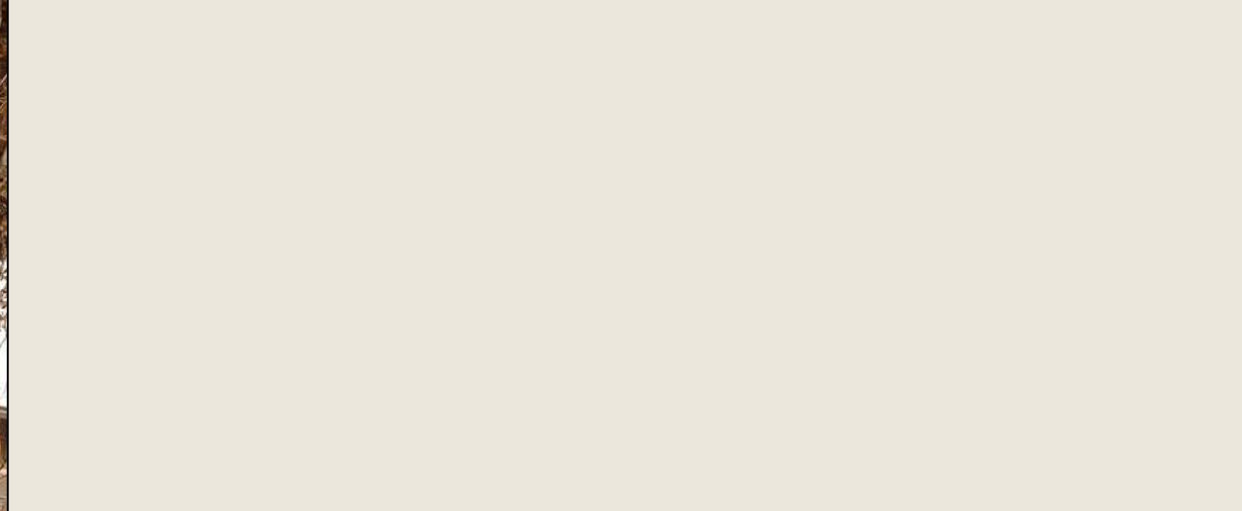
Avoid tanking water



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Madeline Ryder



Lincoln Perino, Ethos Rainwater

Flush with rainwater through earthworks



Plant pairing

HIGH WATER USE / HIGH VALUE PLANTS



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Plant pairing

HIGH WATER USE / HIGH VALUE PLANTS

EDIBLE PLANTS



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Plant pairing

HIGH WATER USE / HIGH VALUE PLANTS

EDIBLE PLANTS

CONSIDERING PLANT DEMAND

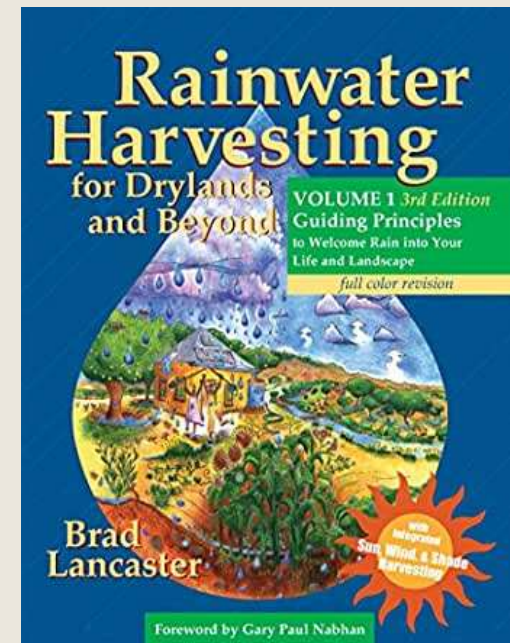
watershedmg.org/water-budget-calculator

For 15 foot canopies....

Native shade tree (mesquite, palo verde): 1,500 gal/yr

Edible deciduous (fig, pomegranate): 1,500 - 2,500 gal/yr

Edible evergreen (citrus): 5,5,00 gal/yr



Plant pairing

HIGH WATER USE / HIGH VALUE PLANTS

EDIBLE PLANTS

CALCULATING PLANT DEMAND

CALCULATING WATER SUPPLY

watershedmg.org/water-budget-calculator

Top loading = ~30-40 gallons/load

Front loading = ~15-20 gallons/load

Front, 3 loads/wk = ~2,800 gallons per year

➤ *Irrigate 1 mature dwarf citrus or 2 pomegranates or 1 fig*

Front, 5 loads/wk = ~4,700 gallons per year

➤ *Irrigate Citrus + Pomegranate*

Plant pairing

HIGH WATER USE / HIGH VALUE PLANTS

EDIBLE PLANTS

CALCULATING PLANT DEMAND

CALCULATING WATER SUPPLY

CONSIDERING SEASONALITY



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Plant pairing

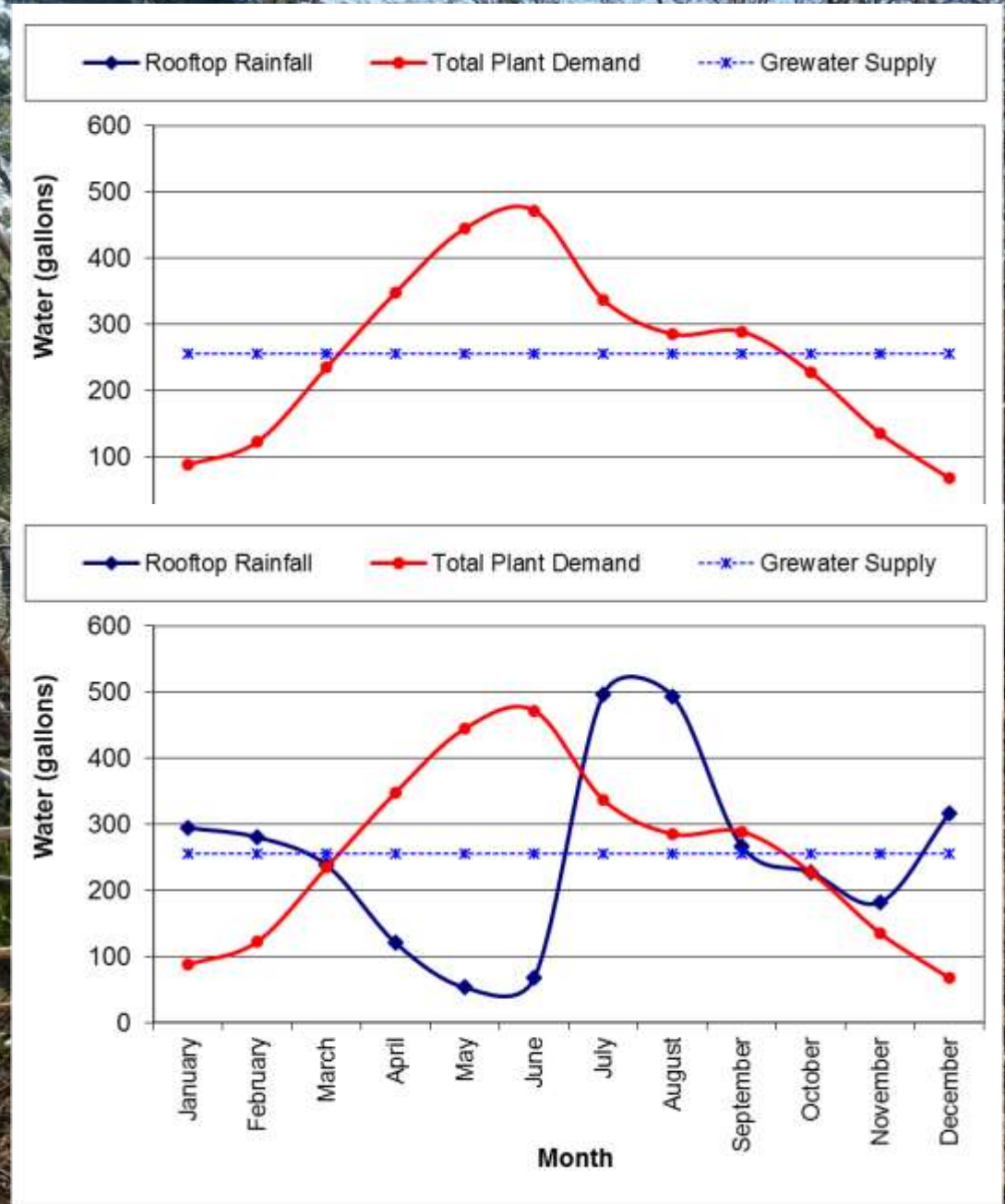
HIGH WATER USE / HIGH VALUE PLANTS

EDIBLE PLANTS

CALCULATING PLANT DEMAND

CALCULATING WATER SUPPLY

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Plant pairing

HIGH WATER USE / HIGH VALUE PLANTS

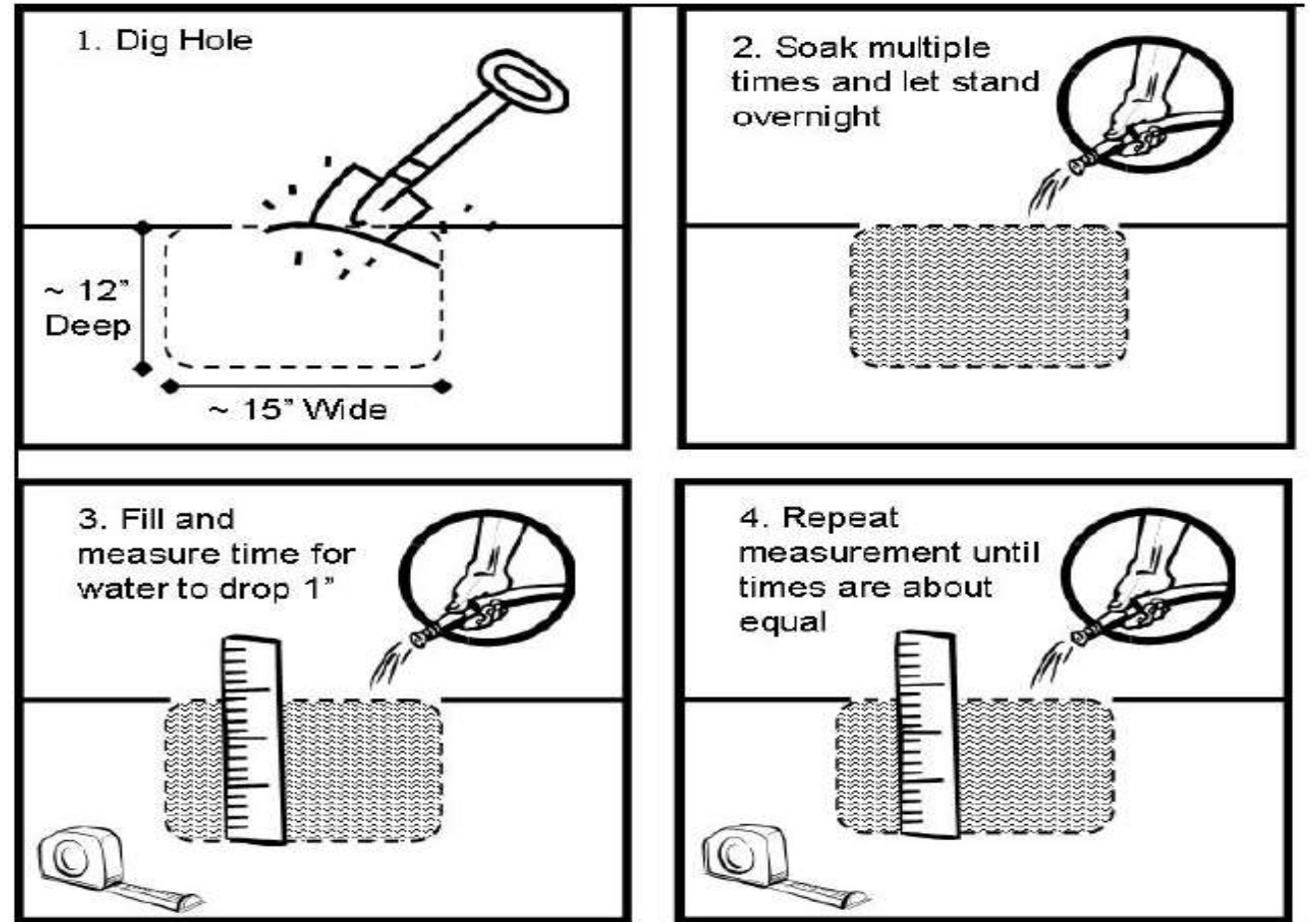
EDIBLE PLANTS

CALCULATING PLANT DEMAND

CALCULATING WATER SUPPLY

CONSIDERING SEASONALITY

SOIL PERCOLATION RATES



Plant pairing

HIGH WATER USE / HIGH VALUE PLANTS

EDIBLE PLANTS

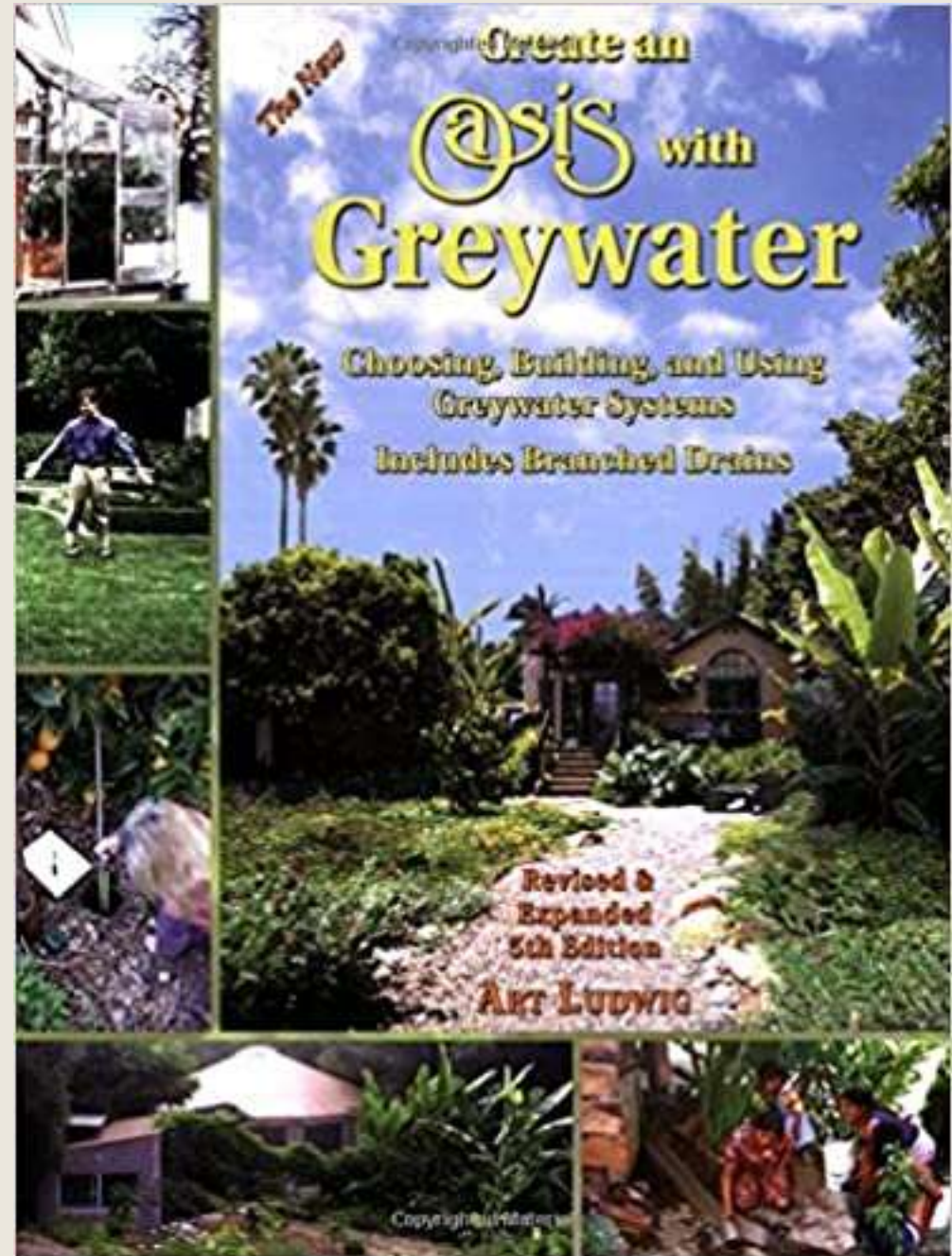
CALCULATING PLANT DEMAND

CALCULATING WATER SUPPLY

CONSIDERING SEASONALITY

SOIL PERCOLATION RATES

CALCULATING BASIN SIZING



A photograph of a tree with a drip irrigation system installed at its base. The ground is covered with mulch and a black pipe with a blue cap is visible. The text "Questions?" is overlaid on the image.

Questions?

Laundry to Landscape

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Sending washing machine water – commonly known as greywater – to your landscape is one of the easiest ways to repurpose used water in your household. The laundry to landscape system relies on the washing machine pump to distribute water up to 100 feet from the machine out to your landscape. The flow can be split up to eight times to distribute greywater around your garden. With some simple plumbing modifications, you can save thousands of gallons of water a year in irrigation and grow fruit trees guilt free.

Lave su Ropa y Riegue sus Frutales

Manteniendo el agua de la lavadora comúnmente conocida como agua gris, al jardín es una de las formas más fáciles de reciclar el agua de su casa. El sistema de lavandería al jardín utiliza la bomba de la lavadora para distribuir el agua hasta 100 pies desde la lavadora al jardín. Se pueden instalar hasta 8 salidas para distribuir el agua en el jardín. Con unas sencillas modificaciones al sistema de plomería, se pueden ahorrar miles de galones de agua al año en irrigación y cultivar árboles frutales.



- 1 Laundry detergent used for use in outdoor area like on lawn or tennis.
- 2 Washing machine pump.
- 3 Diverter valve to divert used water either back to sewer when needed, normally when using bleach or other harsh detergents.
- 4 Diversion valve to divert water to mulched basin or to thirsty fruit tree.
- 5 Check water air vent is correct & system back flowing.
- 6 Threaded brass PVC fittings for plumbing.
- 7 Mulched basin to collect greywater & rainwater.
- 8 Thirsty fruit tree.



Lincoln Perino



- 6 Outlets with valves to control amount of flow each plant receives.
- 7 Góteros con válvula para controlar el flujo para cada planta.
- 8 Mulched basin to collect greywater & rainwater.
- 9 Cuenca con acolchado para coleccionar agua gris y agua de lluvia.
- 10 Thirsty fruit tree.





1" Hose connection



1" 3-way Brass Valve

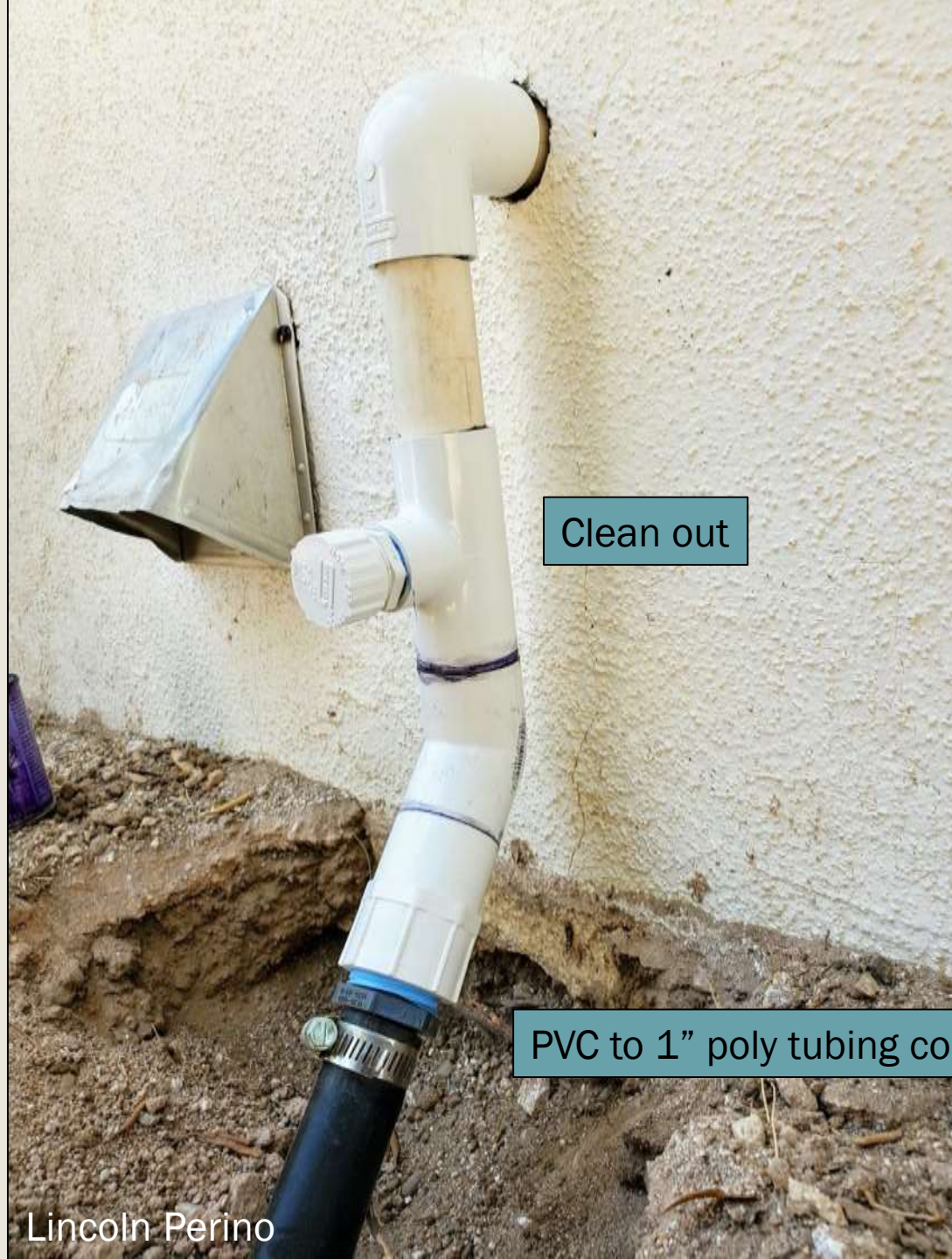
To landscape

To sewer



Anti-siphon vent





Clean out

PVC to 1" poly tubing conversion

1x1x1/2" barbed tee



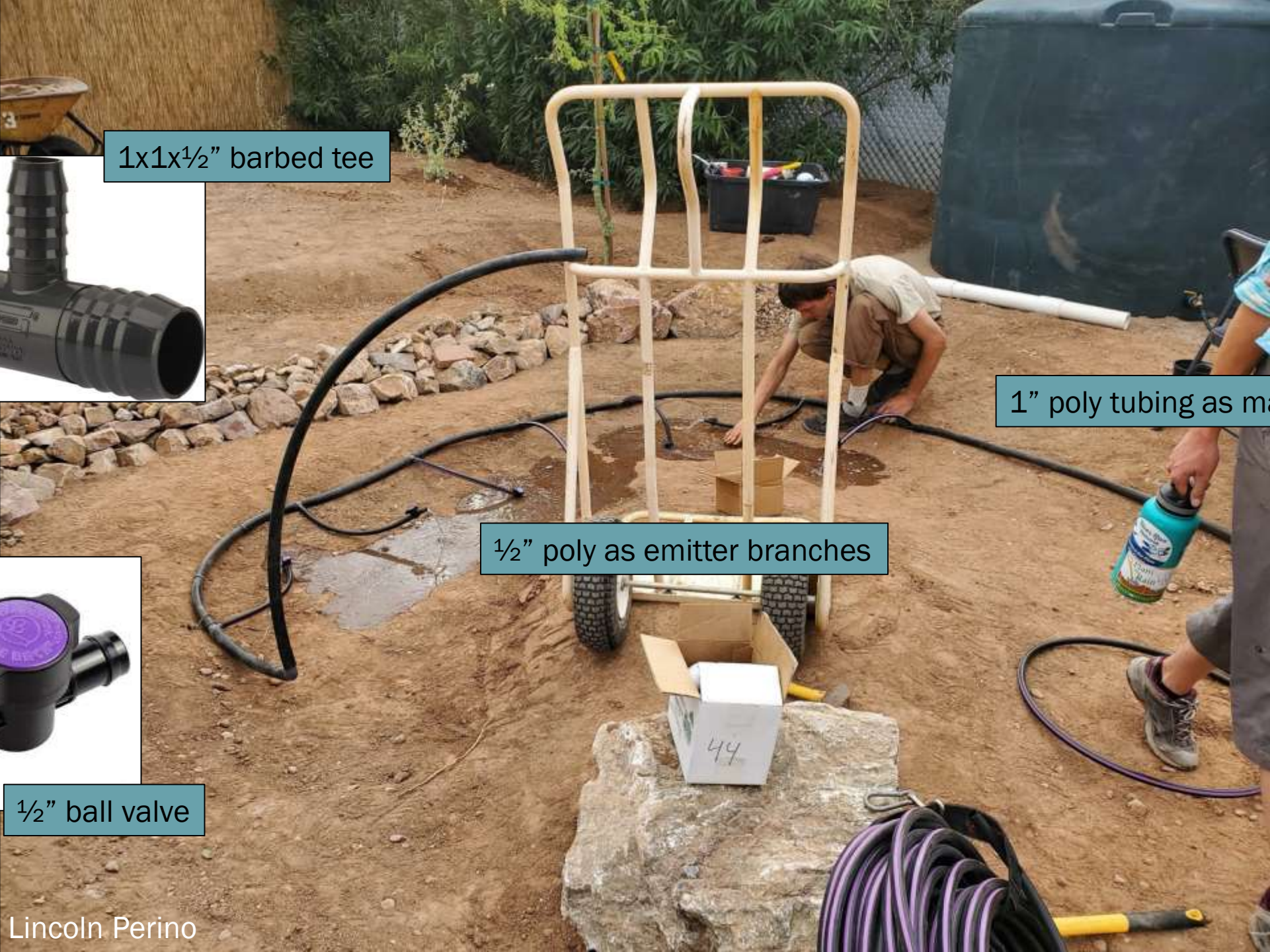
1" poly tubing as main branch

1/2" poly as emitter branches



1/2" ball valve

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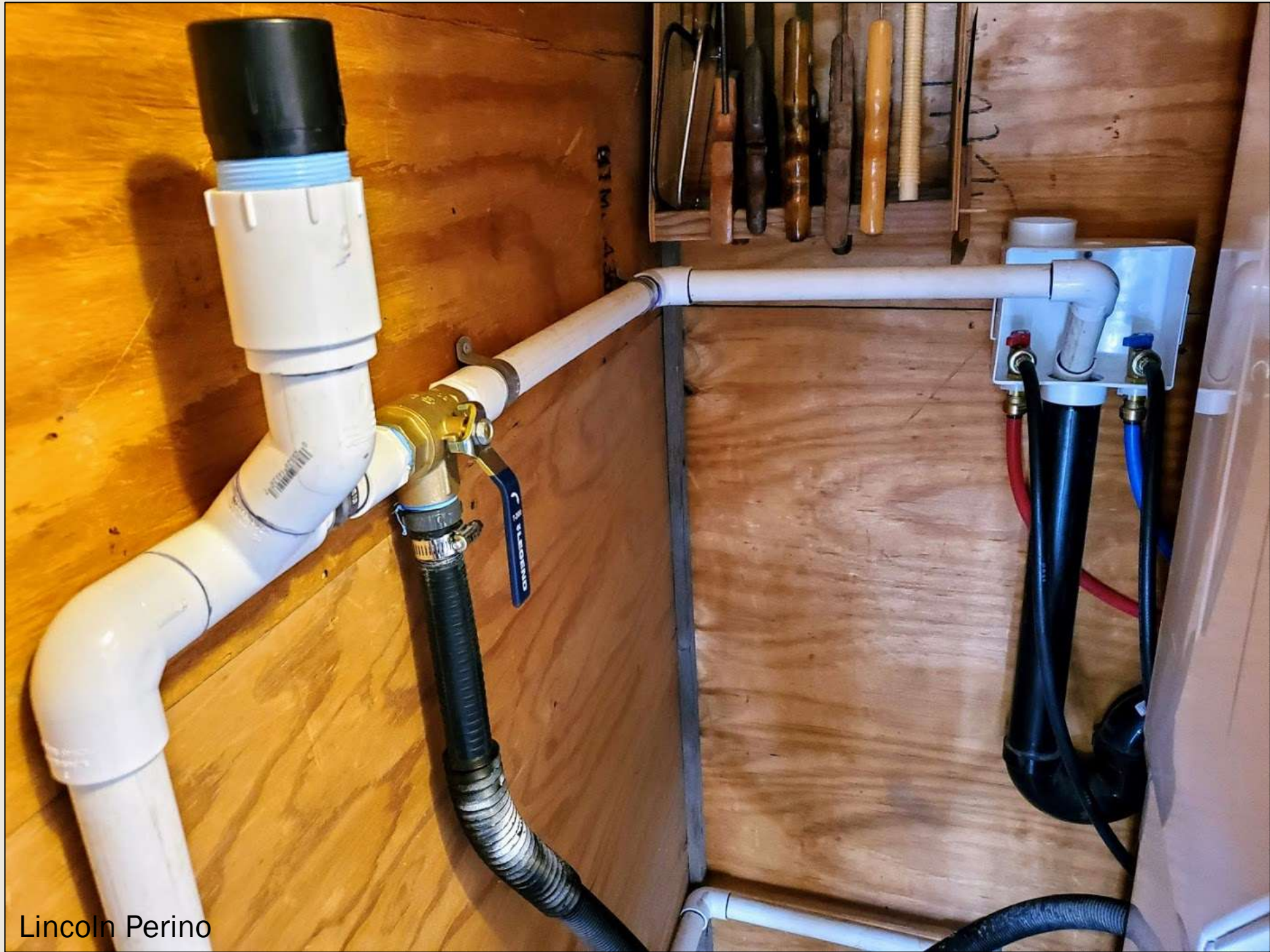
Madeline Ryder



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A photograph of a tree with a drip irrigation system installed at its base. The ground is covered with mulch, and a black pipe with a blue cap is visible in the foreground. The text "Questions?" is overlaid in the center of the image.

Questions?



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Lincoln Perino



Lincoln Perino



Madeline Ryder



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Upkeep

CHECK EMITTERS FOR CLOGS/BURYING



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Upkeep

CHECK EMITTERS FOR CLOGS

CHECK FOR LEAKS



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Upkeep

CHECK EMITTERS FOR CLOGS

CHECK FOR LEAKS

MONITOR PLANT HEALTH



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Upkeep

CHECK EMITTERS FOR CLOGS

CHECK FOR LEAKS

MONITOR PLANT HEALTH

REPLENISH MULCH IN BASINS



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Upkeep

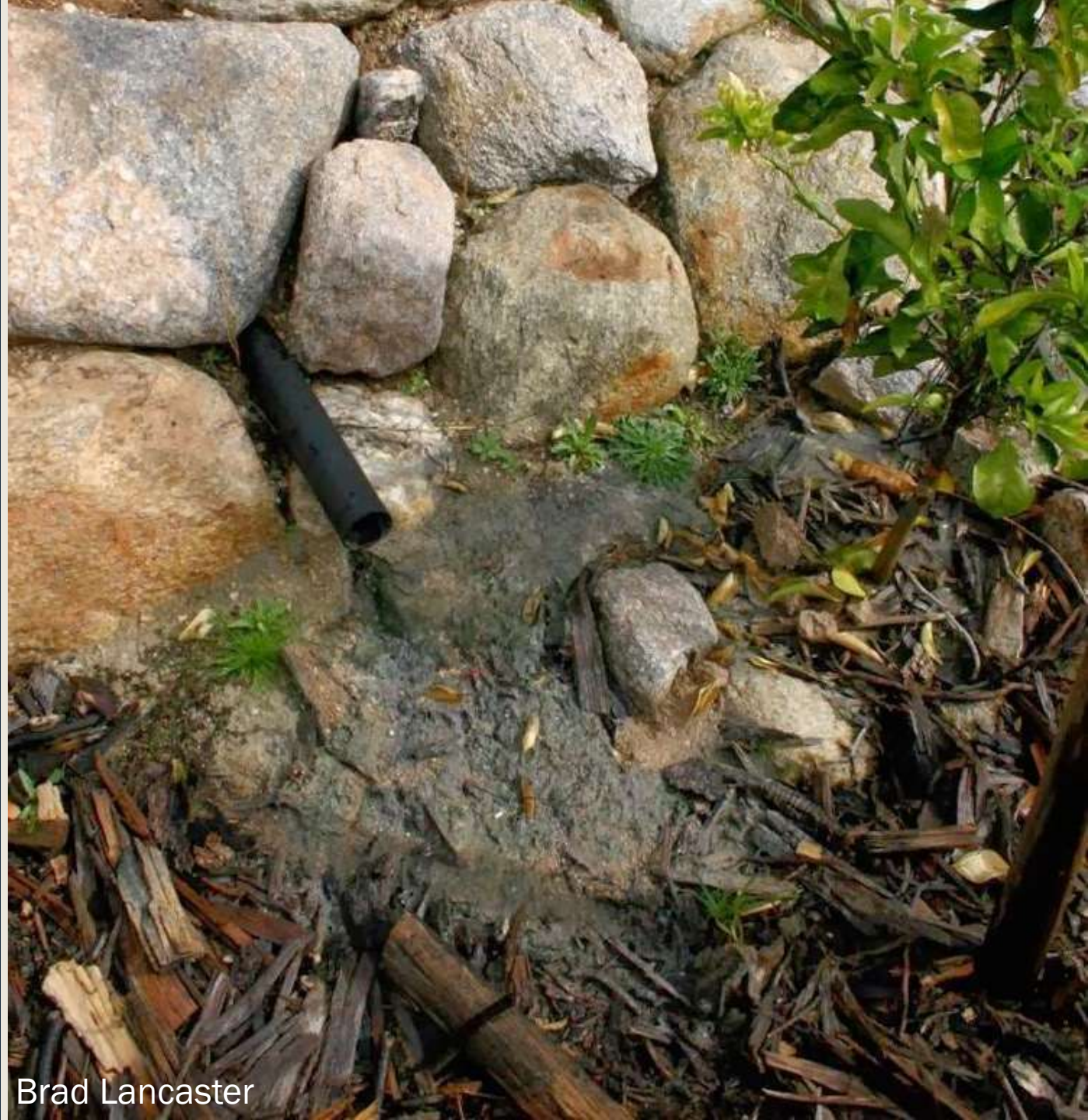
CHECK EMITTERS FOR CLOGS

CHECK FOR LEAKS

MONITOR PLANT HEALTH

REPLENISH MULCH IN BASINS

REMOVE OR INCORPORATE LINT



Brad Lancaster

Upkeep

CHECK EMITTERS FOR CLOGS

CHECK FOR LEAKS

MONITOR PLANT HEALTH

REPLENISH MULCH IN BASINS

REMOVE OR INCORPORATE LINT

FLUSH BASINS WITH RAINWATER



Lincoln Perino

Upkeep

CHECK EMITTERS FOR CLOGS

CHECK FOR LEAKS

MONITOR PLANT HEALTH

REPLENISH MULCH IN BASINS

REMOVE OR INCORPORATE LINT

FLUSH BASINS (IF NO RAINS)

MOVE EMITTERS WITH PLANT GROWTH



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watershedmg.org/learn/classes/field-studies

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