

Every Garden Can Become a Sponge

Slow it, spread it, sink it, store it!

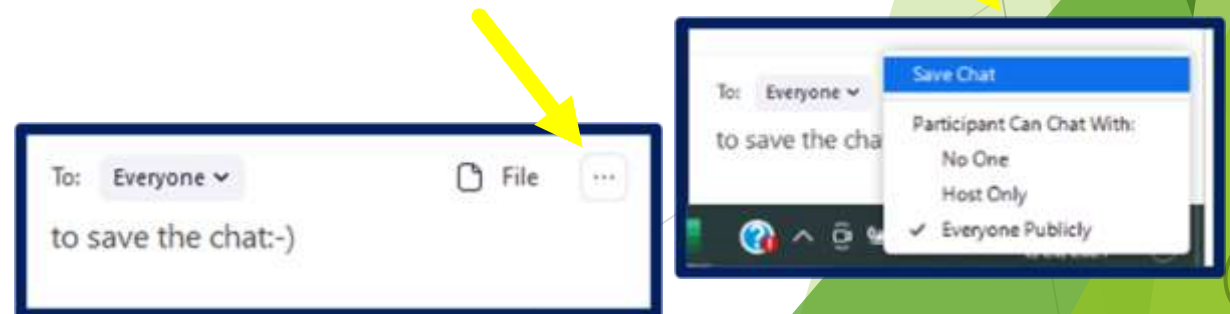


Presented by Lyla M.,
San Bernardino County Master Gardener
Presented on October 10, 2021

Research and content by Betsy Haffner

Housekeeping

- This presentation will be recorded.
- Please feel free to ask questions as we go along in the chat. I will answer questions at the end of each section. (Please include your general location if it's relevant.)
- Please turn off cameras to save bandwidth and keep mic on mute when not in use.
- If you would like a PDF of this presentation, please email: mgsanbern@ucanr.edu
- You can save the chat with the links that we have added by clicking the 3 dots on the top right-hand side of the chat window and clicking “save chat”.



San Bernardino County Master Gardeners

- Part of Agriculture and Natural Resources Division (UCANR)
- Trained volunteers educating the public by sharing peer-reviewed research done by University of California and other universities
- Wide variety of topics including growing food, sustainable landscaping, and better living through gardening



Other UCCE Programs in San Bernardino County

- EFNEP (Expanded Food and Nutrition Education Program)
- 4-H Youth Development Program
- Master Food Preservers
- Academic Advisors (Natural Resources, Horticulture, Dairy, Urban Ag)
- To learn more, visit our website:
<http://cesanbernardino.ucanr.edu/>
- *UCCE: University of California Cooperative Extension



San Bernardino Regional Seed Library (SBRSL)

Share

Share donated and community shared seeds with the public

Locations

Seed Library Locations in Montclair and Yucaipa (note: both locations are currently closed due to COVID, but we will be sure to share when they are open again!)

Free Classes

Free monthly Seed Saving Classes on a variety of seed topics



Citrus Greening Disease - Huanglongbing (HLB)



- ❑ Spread by the the Asian Citrus Psyllid (ACP), a small insect that carries the disease.
- ❑ All citrus varieties are susceptible
- ❑ There is no cure yet!
- ❑ When sharing fruit, don't share stems and leaves (to prevent the spread of the insect)
- ❑ Wipe off or gently wash fruit before sharing or moving (without soap, just cold water)
- ❑ Do not share cuttings
- ❑ For more information: ucanr.edu/sites/ACP



Now to our presentation!

Every Garden Can Become a Sponge

Slow it, spread it, sink it, store it!



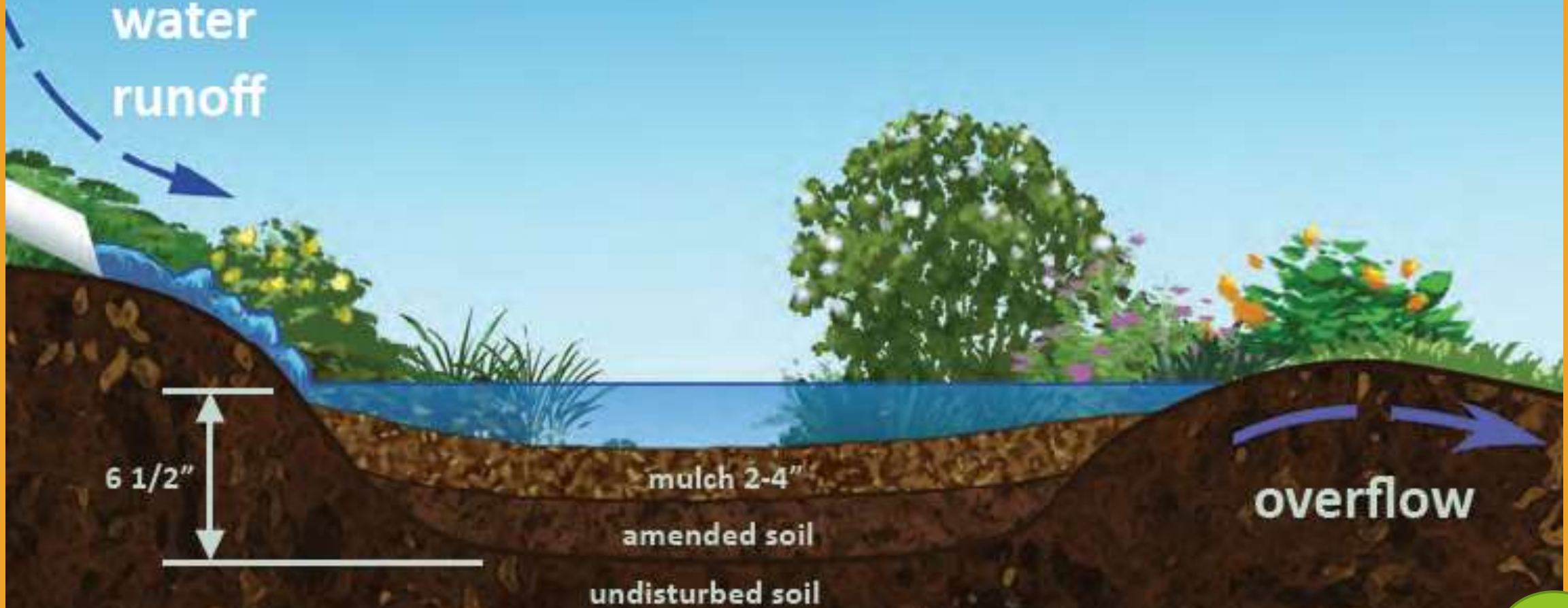
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“Slow it, spread it, sink it” is the rallying cry of this permaculture principle of rain capture, and with some fairly simple landscaping—small berms, swales, and basins that direct, detain, and filter water—we can invigorate our soil ecology, enhance our yard's aesthetic and habitat value, filter pollutants and help relieve over-tasked city storm drains.

- The goal of on-site rain capture is to allow water to percolate into the soil rather than to create holding ponds, which require more complex engineering (and can foster mosquito breeding).

Simple Rain Garden Recipe

roof
water
runoff



6 1/2"

mulch 2-4"

amended soil

undisturbed soil

overflow

If you're resourceful, drought does not mean the end of your landscape; it just means a different way of doing things.

What we are going to talk about:

Swales

Berms

What are Swales? What are Berms?

Berms (mounds) are raised areas that will slow or stop the water running off on a hillside. A well-laid berm can hold water long enough for water to begin percolating down into the soil.

Swales (valleys) can be part of an area's natural landscaping, or they can be created to help ensure proper drainage, minimize runoff or capture storm water. In simple terms, they are generally shallow ditches that have gently sloping sides.



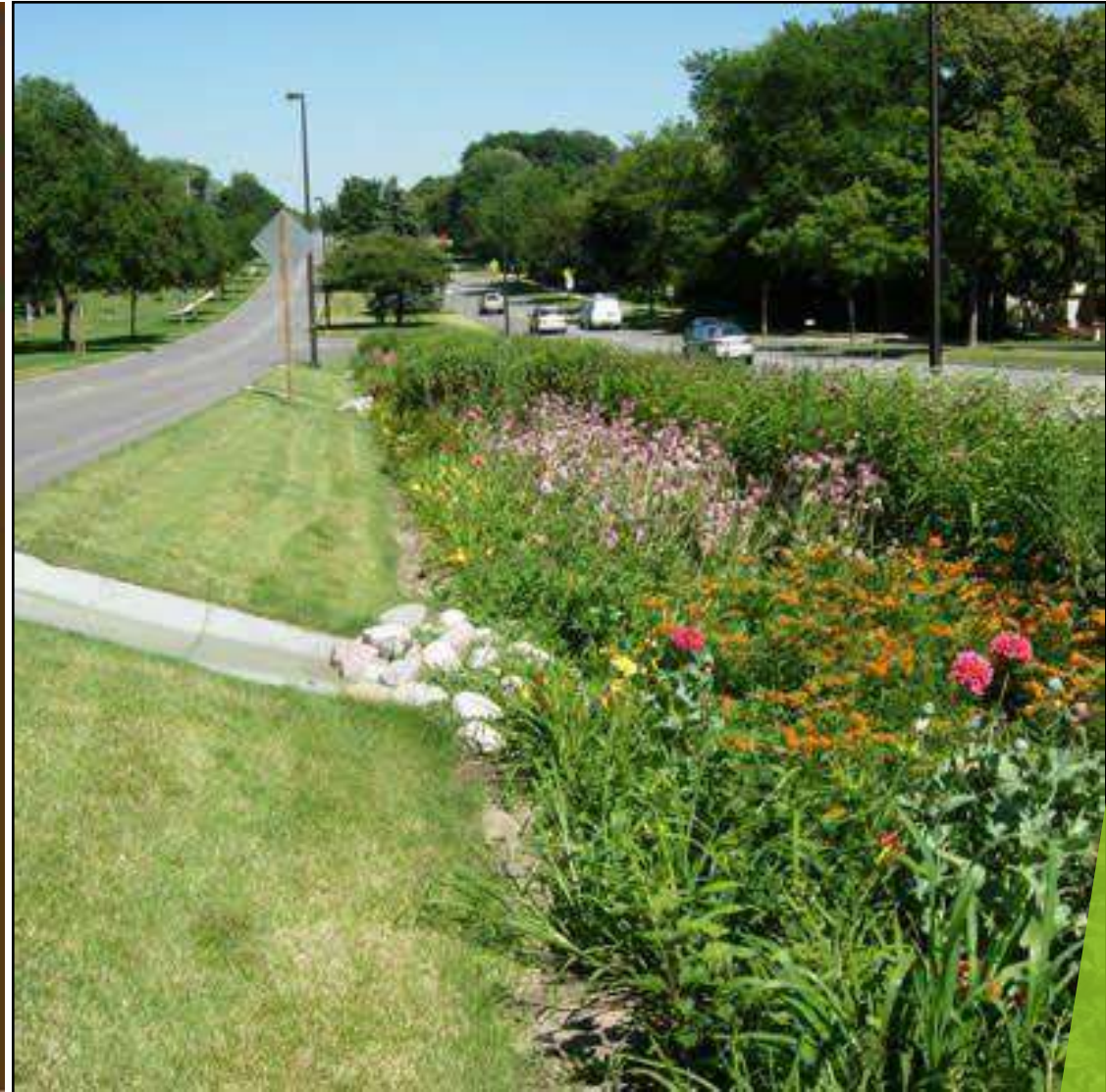
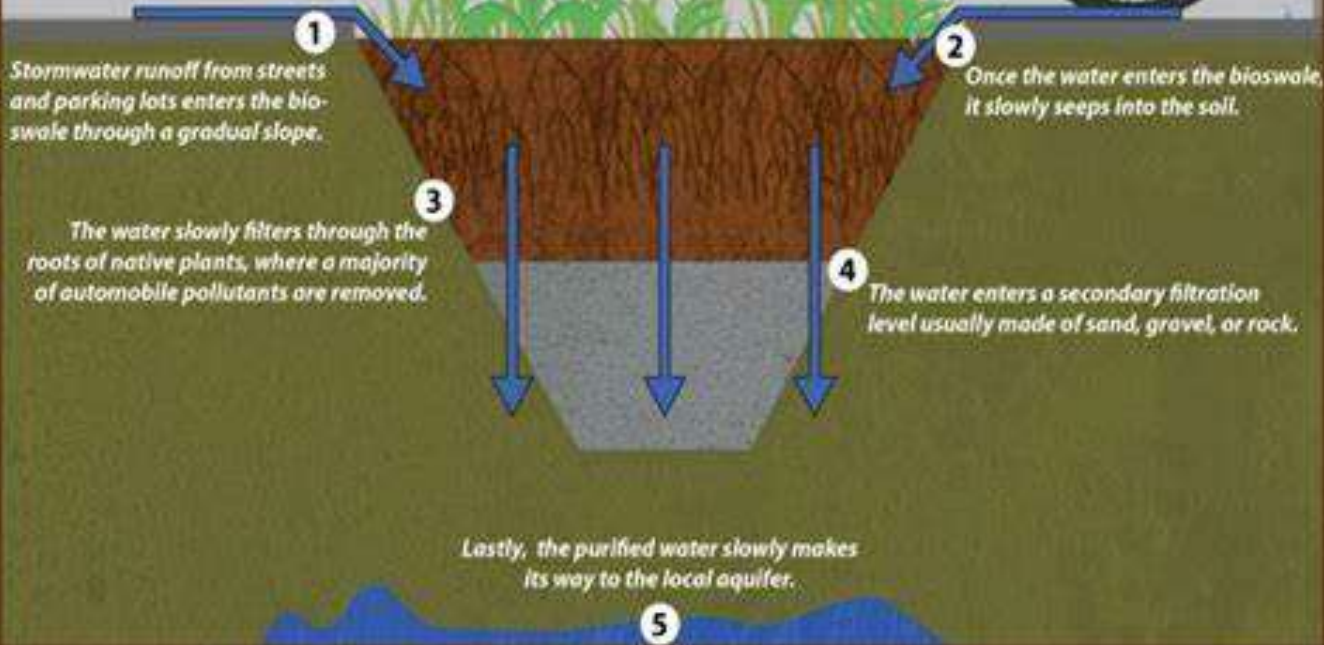
Photo credit: Organic Farmer Magazine

Berm with a Swale

How Do they Work?

A bioswale is a ditch that allows for rainwater to soak into the earth slowly, rather than flooding streets or going into the ocean.

Here's how it works:



What are Swales used for?

- A swale is a shallow channel, bermed (sloped) a bit on both sides, that lets gravity do the work of moving rainwater along a gently sloping course.
- The swale directs water away from structures and through a straight or meandering depression lined with river rock, grasses, or other vegetation that can tolerate periods of winter wet and summer dry (regional native plants generally fit the bill).

Key Elements in Building a Swale

- Swales are not intended to **move** water but to **hold** water for soil absorption.
- Soil in the swale should not be compacted or sealed but should be loose - to encourage absorption.
- A manageable swale for a home is from six to twelve inches deep and twice as wide.
- The swale can be back-filled with a layer of sand and/or gravel on the bottom, covered by decaying wood, blanketed with dried leaves or straw, then finished off with topsoil.
- The swale speeds the rate and deepens the storage of water seeping into the soil.

How to build a Berm

- The leftover dirt from digging the swale will form the berm on the downward side of the swale.
- The berm can be seeded with fast-growing grass or legumes.
- The berm should slow the water, allowing it to back up over the swale.
- Planting into your berm provides additional moisture and nutrients for plants


What are Berms for?

Berm uses are either practical or aesthetic.

- For instance, a berm in the landscape may be constructed from soil to hold water in around a tree, so that the water doesn't just run away from the roots, but instead soaks down into the root system.
- Another use for a berm is to slow or direct runoff on steep slopes. In this case, a berm is often accompanied by a swale, which absorbs the runoff water.
- Sometimes a berm is used in the landscape to create a natural looking raised bed or to highlight a certain area or focal point of the garden.
- Berms are also commonly used in golf courses.

To sum up about Swales & Berms:

- Using landscaping techniques such as berms and swales, you can create a garden that incorporates plants with a range of water needs.
- Siting drought-tolerant plants on top of a berm—a low mound of well-draining soil—is the best way to assure they do not become overwatered.
- Building a swale next to the berm will create a space for thirstier plants. A swale is a ditch dug into the native soil which is then filled with looser soil.
- Water will run off the adjacent berm and settle in the swale, providing additional hydration to the plants there.



Your swales & berms will help your property to slow rainwater runoff, spread it, sink it, and store it - to help your garden thrive!

Now let's talk about contours

- Contour gardening is a way to use the land's contours to reduce irrigation and erosion, and maximize nutrients for abundant harvest yields. It's a popular tool in permaculture gardens.
- It is the practice of performing tilling, planting and other farming operations **on or near the contour of the field slope** to reduce erosion. Crops are planted **across** a slope following the natural elevation contour lines, rather than up and down the hill. When planted along the natural curve of the land, gullies and soil erosion are reduced.



Photo credit: Tenth Acre Farm



Photo credit: PermacultureVisions

- Runoff is best controlled by following the slope contour, but straight rows can be aligned across the slope to reduce runoff.
- Contours provide the advantage of increasing soil moisture retention while reducing runoff.
- You can create a buffer strip of perennial plants alternated with strips of cultivated plants to slow runoff and trap sediment. This practice can also enhance wildlife habitat.



Photo credit: Permaculture Research Institute

Contour gardens also create microclimates of sun and shade, creating diverse growing areas, and improving soil ecology and rainwater infiltration

Contour Your Garden in Eight Easy Steps

1. **Make Your Site Plan** and note where rain falls and flows.

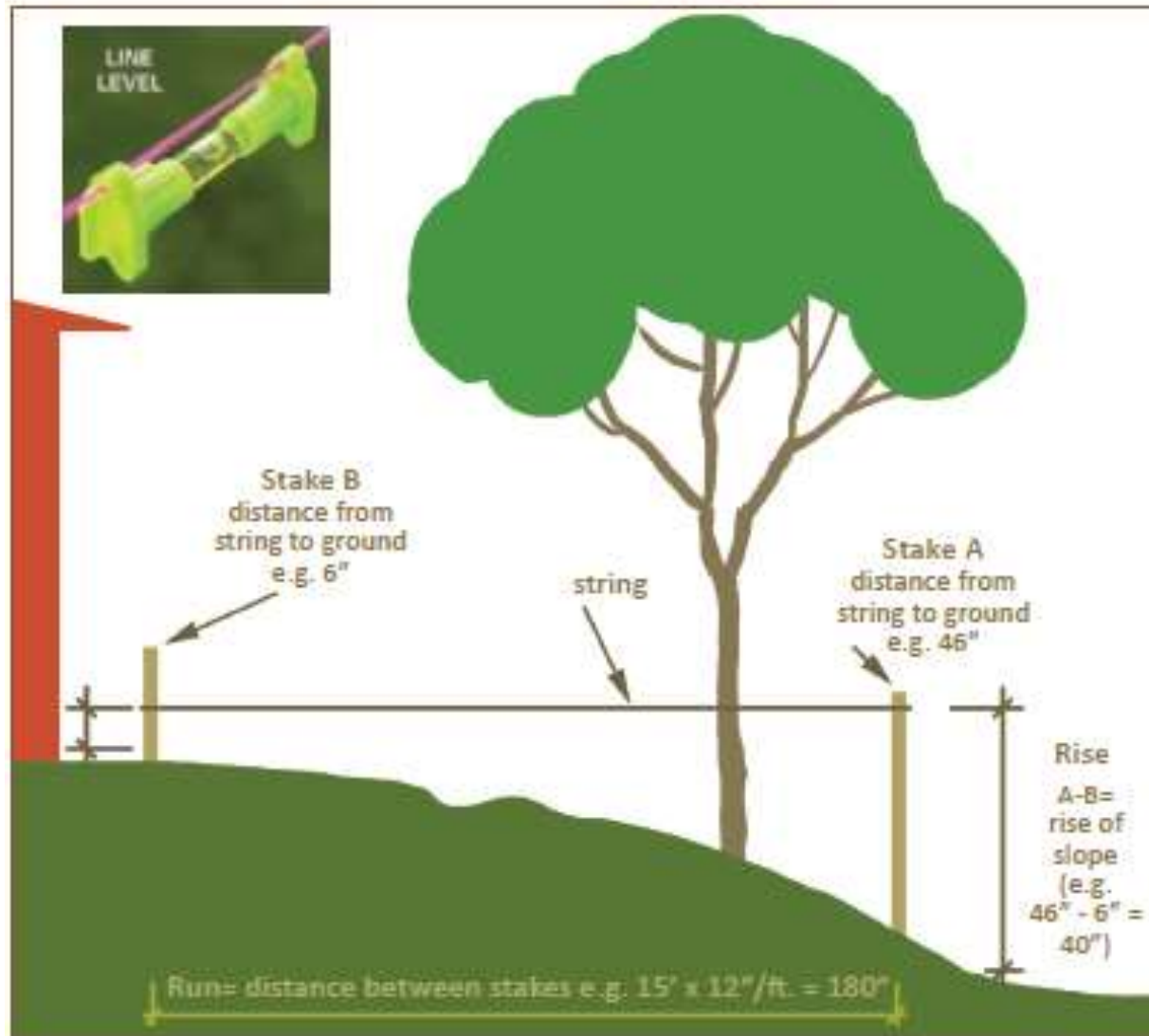
Look for an open, mostly flat low spot to direct water towards in the front yard, or anywhere with the center at least 10' away from the house foundation and 3' away from the sidewalk and neighbors.

2. **Lay Out Your Low Spots**

Spread out a garden hose to outline the shape. The area must be basically flat or slightly bowl-like, and **not** sloping back toward the house.

Be careful around trees. Don't put your contours under a mature tree or disturb any big roots. Remove all plants (including grass) from the area and start digging.

Contour Hillside with Caution



Rise of Slope = Stake A - Stake B = 46" - 6" = 40"

Run of Slope = 180"

Slope Percentage is Rise Divided by Run Multiplied by 100 or $40" \div 180" \times 100 = 22\%$

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Contour Your Garden in Eight Easy Steps

3. Do A Percolation Test. If you have compaction, try to break through it with a shovel or a pitchfork.

4. Dig A Basin that is between 6” and 12” deep at the center. Slope the sides gently to make a sloping bowl, not a cylinder. **For every 1,000 sq. ft. of roof area, plan on creating a basin covering 150 sq. ft., and six inches deep.**

5. Mound Extra Soil around the bowl to increase capacity. At the bottom of the basin, put down at least an inch of high-quality compost or worm castings to activate your soil.



Do not dig without calling 8-1-1-DIG ALERT!

Avoid These Mulches Around Plants!

While these mulches are commercially available, and some are organic materials, they are not recommended. For example, dyed mulches are composed primarily of recycled wood materials such as treated or painted furniture or wood pallets. Shredded redwood or cedar present significant fire hazards. Gravel and rubber are not eligible for the rebate, do not decompose to feed the soil microbes, and raise the temperature of the entire landscape.



"gorilla hair"
shredded wood



dyed wood



dyed wood



gravel



rubber

Contour Your Garden in Eight Easy Steps

6. Direct Downspouts Into The Basin area, moving the rainwater through gravel lined ditches or aboveground drainage pipes. Also, make an overflow path so extra water has a direct channel away from your house.

7. Plan For Overflow that isn't directed onto your neighbor's property; overflow always should be directed from your property into the street.

8. The Basin Will Fill Up when it rains, creating a temporary pond until the water soaks into your soil. All the water should be gone in 24 hours.

That's it!

Any questions?

Resources

- [UC Master Gardeners of Napa County - UC Master Gardeners • Napa County \(ucanr.edu\)](#)
- [Making Stormwater Great - for the First Time | Conservation | Parks and Recreation Magazine | NRPA](#)
- [“Slow it, Spread it, Sink it” –Creating a Rain Garden in Your Home Landscape - The Real Dirt Blog - ANR Blogs \(ucanr.edu\)](#)
- <https://www.gardeningknowhow.com/special/spaces/creating-and-using-berms-in-the-landscape.htm>
- [Napa Master Gardener Column - Agriculture and Natural Resources Blogs \(ucanr.edu\)](#)
- [mwd_waterwise-garden_california_friendly_landscape_handbooksm.pdf](#)
- <https://ucanr.edu/sites/farmwaterquality/files/156379.pdf>
- <https://www.tenthacrefarm.com/contour-gardening-minimize-irrigation/>

Master Gardeners do not endorse any products or companies that may have been referenced in this presentation.

Thank you for attending!

Our website: <http://mgsb.ucanr.edu/>

Contact our Master Gardener Helpline at: mgsanbern@ucanr.edu 909-387-2182

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