

California Watershed Approach to Landscape Design



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California Chapter



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Watershed Approach Landscapes

© Marilee Kuhlmann, 2018

Marilee Kuhlmann, Los Angeles

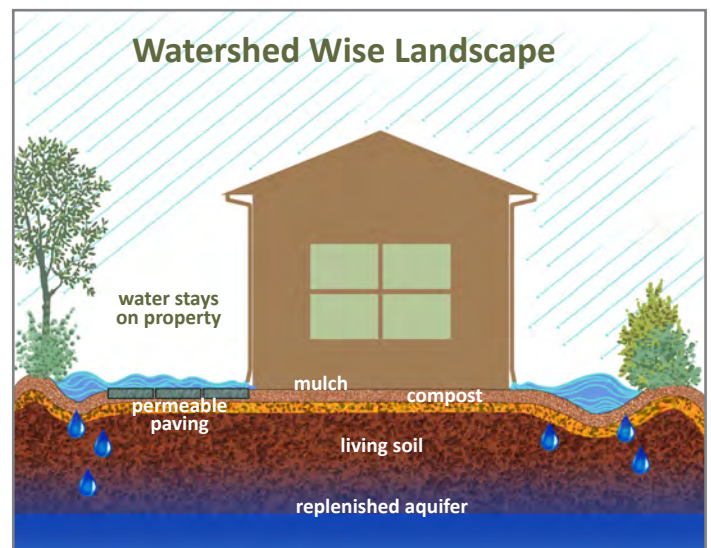
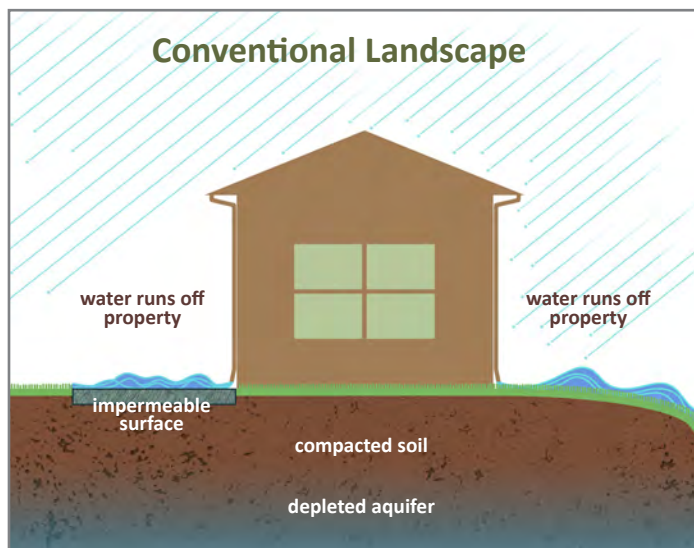
These Beautiful gardens...

require less water, but don't look dry; they are attractive, lush and evergreen because their designers followed the principles of the watershed approach to landscaping.

While conventional landscapes allow water to run off the property and often waste water, watershed wise landscapes are designed to hold on to rainwater and reduce the demand for supplemental irrigation. In the pages that follow, you'll see inspirational gardens that allow us to continue enjoying California's varied and amazing climate and outdoor lifestyle, while conserving valuable natural resources and creating a diverse habitat of plants and insects.

If we want California landscapes that are truly resilient to changes in climate and ecosystems, we need to go beyond sustainable and water wise principles to begin managing each property as though it were a mini-watershed. By paying attention to the design of the garden, building soil and keeping rain on our properties, selecting climate-appropriate plants and managing supplemental irrigation, we transform our landscapes into abundant watershed wise enhancements to our properties and neighborhoods.

Now dig in!



© G3, Alex Stevens, 2018

In three **Easy Steps**

Healthy **Living Soil** captures **Rainwater**.



Homeowner Paul Marshall, Elk Grove

Healthy living soil is made by adding compost to your soil, covering your garden with mulch, and by avoiding soil disturbance as much as possible. Compost boosts soil organisms that reduce diseases and pests. There's no need for adding fertilizers or pesticides on watershed wise gardens.

Maintaining 2" - 4" of organic mulch on top of every open space in the landscape keeps the garden looking clean while slowly building the soil. The mulch holds in water, so less irrigation is required (*see p. 24*).

When downspouts are directed to these landscapes, living soil becomes a giant sponge that helps keep plants healthy and happy, whether it's raining or we're in a drought (*see p. 26*).

Climate-appropriate **Plants Reduce Irrigation** needs.



Urbaflora, North Hollywood

Selecting climate-appropriate plants like those from Mediterranean climates and, even better, from your own native plant communities, makes your garden automatically adapted to California's seasonal summer drought and wet winter months. Many plants from the five Mediterranean climates, (South Africa, area around the Mediterranean Sea, Chile, Australia, and California) are appropriate for California gardens. However, California is the driest of the Mediterranean climates.

Local native plants benefit the local native birds and insect species by providing food and nesting materials! There are many dry-adapted evergreen and long-flowering California native plants. When you use them in your garden, you get year-long interest and a garden filled with life, on reduced summer irrigation (*see p. 32*).

Efficient Irrigation supplements rain.



Flower to the People, Inc., Culver City

There may be years when there isn't enough winter rain, or you may have plants you love that struggle to thrive in the long, hot, dry summers. In those cases, you want to apply supplemental water through a highly efficient irrigation system.

Efficient irrigation makes sure every drop of water applied to the landscape stays there for the benefit of the plants. By using soil moisture sensors and/or weather-based "smart" irrigation controllers, low flow spray nozzles, and drip irrigation, you can keep your landscape healthy without wasting water (*see p. 39*).

You also can reduce your irrigation use just by paying closer attention to it. Grab a cup of coffee and get to know your irrigation controller!



© Dins Danielle, 2018

Fleur Nooyen and Associates, LLC, Los Angeles

Why Hire a designer?

A healthy landscape is one that offers both lasting beauty and practical functions . . . season after season. If you would like guidance in making the most of your front and back yard—your own personal watershed—consider hiring a landscape professional to achieve your garden goals and educate you about the techniques required to regenerate your property.

Landscape designers offer a broad range of services—from coaching and consulting to full-service planning and designing—which can be tailored to your particular needs. As you work with professionals well versed in the watershed approach to landscaping, from design through installation and maintenance, you will see a healthy and enduring landscape result from this joint commitment.

But the greatest value of all is the opportunity to make the change you wish to see in the world—right in your own garden. Every garden, everywhere, can be watershed wise.

Share the ideas in this book with your designer or use the How-to sections to Do-It-Yourself (DIY). Either way, you can improve your life and the value of your property by making your garden more watershed wise.

Urbafloria, Venice

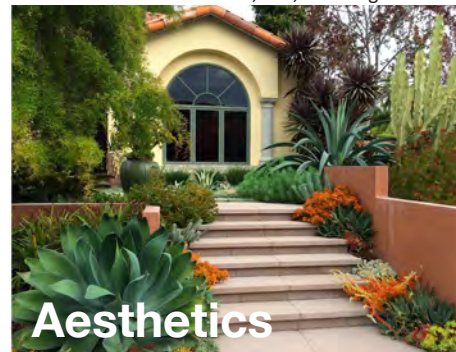


© Jacky Surber, 2018

Functionality

When professionals transform a garden, their guiding principle is to ensure its long-term health. They look for opportunities to improve the soil with compost and mulch, shape and contour the land to make the most of rainfall, and select climate-appropriate plants that thrive in the local environment.

Amelia B. Lima & Associates, Inc., San Diego

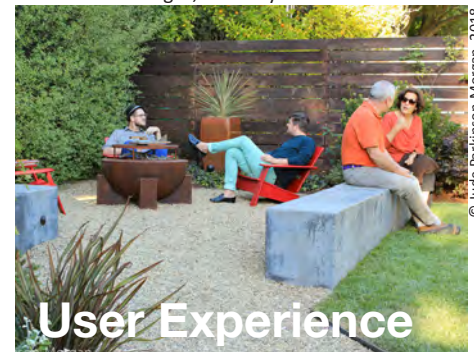


© Amelia B. Lima, 2018

Aesthetics

The art of garden-making draws from the principles of scale, color, texture, and placement of plants and features. Landscapes are living, dynamic performances, and the long-term health and viability of the garden requires knowledge of the science behind what we see with our eyes. A well-designed landscape will continue to grow, change, surprise, and delight for decades.

Nina Mullen Designs, Berkeley



© Jude Parkinson-Morgan, 2018

User Experience

A well-executed landscape design not only makes your home more enjoyable, it adds to your useable space. Studies have shown that thoughtfully developed outdoor spaces can increase the value of a home by up to twenty percent. And a well-maintained landscape ensures that you retain that value.

Landscape like a Professional



© Pamela Beutler, 2018

Gabrielle Harris, West Los Angeles

Scope Your Project

If your budget is limited, you may want to make small improvements first and then bigger changes in a year or two. Working with a professional designer can help you plan these phases. You may start with weed removal and preliminary planting, then add features such as raised vegetable boxes or a rain garden. Plan ahead before you lose the lawn. Like anything, an ounce of prevention is worth a pound of cure. Implementing the basic functionality of the watershed approach does not add to your overall installation budget.

When you invest in your landscaping, you are investing in the long-term value of your property. Don't forget to plan an ongoing maintenance budget allocation for keeping the garden healthy over time (see p. 42). Stretch your dollars by taking advantage of rebates and incentives offered by your local water agency.

Landscape = Softscape + Hardscape

Softscape includes ground preparation, planting, irrigation, and lighting; hardscape refers to everything that is built. Consider that the landscape is raw ground to be prepared, graded, etc. All of the typical building trades work on a landscape: plumbing, electrical, and if you are installing hardscape or covered structures, expect to include masonry, carpentry, fixtures and appliances. Many people who go DIY can remove turf, make grade changes and build soil through sheet mulching. Planting also can be accomplished using the techniques outlined in this book. The more you do yourself, work with what you have, or select low cost materials, the more affordable you will make your landscape changes.

There is no such thing as a typical budget for landscape design and installation. While a good **RULE OF THUMB** is to budget 5% - 10% of your home's current market value in a landscape renovation, every site is different, and the situations encountered on that site will dramatically influence the overall budget for the project. Location, expectations of the neighborhood, and aesthetics must be combined with all of the functional requirements discussed in this book to inform the final budget for your landscape. When you take into consideration special site circumstances such as slopes or tricky drainage, expect to spend more on design and installation. If you include hardscape, covered structures, or other built amenities like outdoor kitchens and pools, the prices rise exponentially.

Need help getting the job done?

Building a garden is a collaborative experience. If your property has a slope or you live in a landslide or fire-prone zone, you may need to seek the professional advice of a licensed civil engineer, landscape architect, or other professional before grading and capturing rainwater on existing hillsides. Protect your investment by hiring a licensed arborist for your tree care and licensed contractors for installation. Talk to your landscape designer for referrals to other qualified professionals.

Invest in Design



The more time you spend researching your options and planning your garden, the better prepared you will be during construction. Measure twice, dig once! Spend the time yourself, or expect to pay 10% - 20% of your budget on professional design assistance.

Invest in Soil



© Paul Herzog, 2018

Soil preparation is the single greatest investment you can make in the long term health and beauty of your garden. Buy your compost in bulk, and expect to spend at least 10% of your budget on building healthy Living Soil (see pp. 20-25).

Invest in Rain



© Anne Weinberger, 2018

Capturing and holding on to rainfall from the roof and adjacent hard surfaces, helps prepare your garden for the long, dry summer and reduces irrigation demand. Expect to spend up to 20% of your budget on labor for grading for rain detention and materials for drainage (see pp. 26-29).

Invest in Stewardship



© Laura Morton, 2018

Plan for the maintenance of your landscape right from the beginning. Select experienced gardeners who are on board with your vision. Expect to see your gardener less frequently for greater periods of time, and expect to pay for sustainable expertise (see pp. 42-43).



© Jude Park Design, Morgan, 2018

Inspiring designs

Nina Mullen Designs, Berkeley

No Two watershed wise landscapes look exactly **The Same.**

That's because while the same principles appear in every landscape, the styles of those gardens reflect the different desires of the property owners. Watershed wise landscapes can look like any type of garden, provided they function as healthy balanced mini-watersheds and reflect the particular climactic conditions in which they reside. Some flaunt their features, while others are more subtle; but all are just plain gorgeous!

Urbafloria, Mar Vista

Jeannie Fitch, Orinda

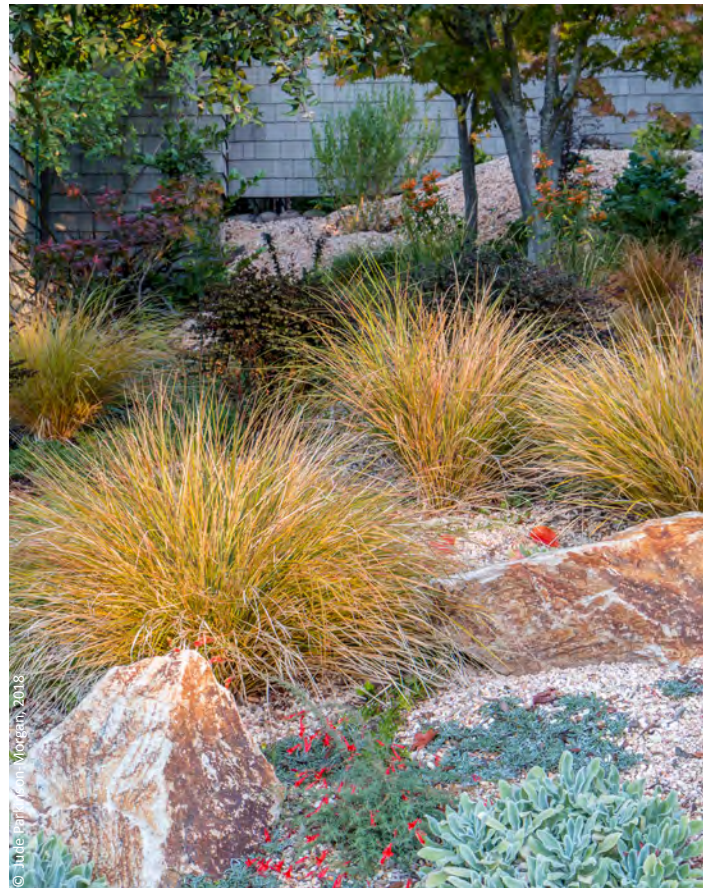


© Jeannie Fitch, 2018

Julie Molinare, Valencia



© Julie Molinare, 2013



© Jude Park Design, Morgan, 2018



© Andrew Ward, 2018

Fleur Nooyen and Associates, LLC, Los Angeles

Train Your Eye to see the watershed approach in **every garden** featured in this book. Look for permeable surfaces, mulched areas, rainwater directed into the landscape, plants from Mediterranean climates, edibles, little or no lawn, and people enjoying their gardens. The real and lasting beauty of these landscapes is in the multiple benefits provided to the community of outdoor water demand reduction, increased carbon sequestration, eliminated polluted runoff, improved air quality, regenerated ecosystems, and the human physical and psychological effects of living in greener spaces.

Urban Water Group, Los Angeles



© Urban Water Group, 2018

Amelia B. Lima & Associates, Inc., Coronado



© Amelia B. Lima, 2018

Gravel To Gold, Del Mar



© Kirby Tomner, 2018



© Bernadette Balics, 2018

Sacramento Gardens

Ecological Landscape Design, Davis

The Sacramento Region's Mediterranean climate experiences all the seasons: hot sunny summers, cool windy autumns, chilled winters, and warm springtime. Summer temperatures can top 100 degrees for many days from June through September, but the humidity remains low through the season. In the winter, Sacramento receives an average of about 16 inches of precipitation per year, along with damp fog and overcast days.

Head South Into the San Joaquin Valley and experience a more intensely sunny summer with winter chill.

Ecological Landscape Design, Davis



© Bernadette Balics, 2018

Gary Kernick, Sacramento

Colleen Hamilton, Sacramento



© Colleen Hamilton, 2018

Martin Carrion van Rijn, Sacramento



© Gary Kernick, 2018



© Martin Carrion van Rijn, 2018



© Gary Kernick, 2018

The Sierra Nevada Mountain Range and foothills are just a short drive to the east of the city, and the weather there is quite different. Depending upon where you are relative to the mountains, you may experience river delta breezes or high winds in the summer, and fruit-setting chill in the winter. With afternoon thunderstorms throughout the summer and regular, heavy snowfall in the winter, the mountain areas are a clear contrast to Sacramento's more temperate climate.

Gary Kernick, Sacramento

Head North of Sacramento to Willows, Oroville, or Quincy, and the marine influence all but disappears.

Colleen Hamilton, Sacramento



© Colleen Hamilton, 2018

Ecological Landscape Design, Davis



© Bernadette Balics, 2018

Ecological Landscape Design, Davis



© Bernadette Balics, 2018

Gary Kernick, Sacramento



© Gary Kernick, 2018



SF Bay Area Gardens

© Mary Fisher, 2018

Mary Fisher, Alameda

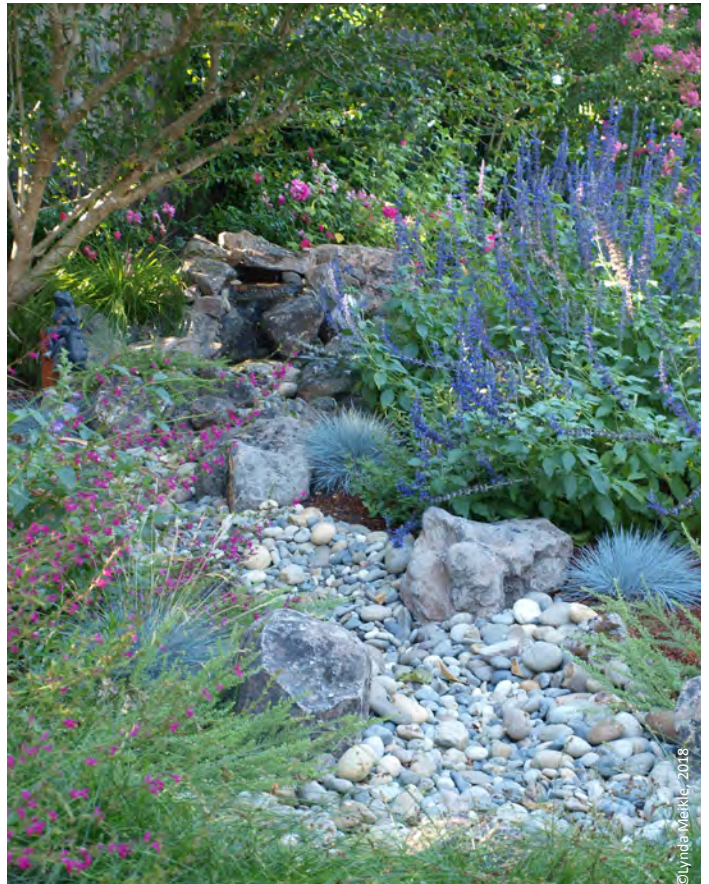
The San Francisco Bay Area, with its myriad of microclimates, hosts a wide variety of soils, watersheds, native plants and animals. The foggy, cool coastal areas along the bay and ocean have a profound marine influence and mild weather year round, while the warmer areas to the East and South contend with hotter summers and colder winters. Average annual precipitation in San Francisco and Oakland is about 24 inches. Don't like the weather? Drive a few miles away, and experience something completely different. Travel down the Peninsula to Redwood City, Palo Alto, and San Jose, to experience the coastal valleys and plains with more sunlight and hotter summers.

Alida Truant, San Mateo



© Alida Truant, 2018

Lynda Meikle, Danville



© Lynda Meikle, 2018

Lynda Meikle, San Leandro



© Lynda Meikle, 2018



Anne Weinberger Garden Design, Piedmont

North Bay and Central Coast are visited by millions of people every year seeking the classic Mediterranean climate that encourages both viticulture and outdoor recreation. In the south, Santa Cruz and Monterey have annual precipitation of about 23 inches, while in the north, the Sonoma and Napa Valleys receive about 21 inches. Santa Rosa, at the northwest end of the region, receives about 31 inches of rain annually, as the climate begins to be influenced by the northern mountains and plains of Mendocino and Humboldt counties where winter rains bring 45 inches annually and a touch of snow.

Josh Williams, Sebastapol



Bonnie Brock Landscape Design, Mountain View



Anne Weinberger Garden Design, Palo Alto



Jeannie Fitch, San Carlos





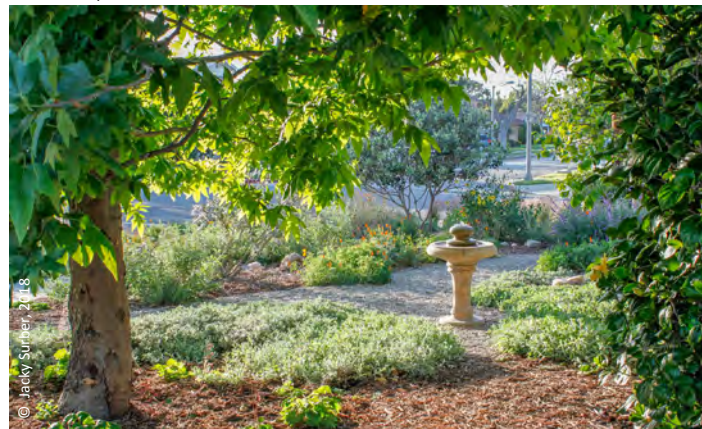
© Francesca Coppa, 2018

Greater Los Angeles Gardens

Dirt Diva Designs, Studio City

The Greater Los Angeles Region encompasses a huge geographic region and enjoys a wide range of climatic conditions from the immediate coastal area of Malibu, where the coastal fog and mild temperatures distinguish it from the rest of the County, to the City of Los Angeles and the San Fernando Valley, where temperatures increase and the proximity to the mountains is felt with hot windy conditions. Inland is the San Gabriel Mountains, foothills, and Inland Empire, where temperature extremes prevail and it routinely snows at elevations down to 5,000 feet. The high deserts of the Antelope Valley and Western Mojave are included, where annual precipitation may be as little as 3 inches per year.

Urbaflora, Mar Vista



© Jacky Sumner, 2018

Flower to the People, Inc., San Marino



© Alex Stevens, 2018

Ketti Kupper, Pasadena



© Ketti Kupper, 2018



© Ross Whitaker, 2018

Laura Morton Design, Valley Village

South Central Coast to South Coast, from San Luis Obispo, Santa Barbara and Ventura Counties to Orange County just north of the San Diego border also are encompassed in the GLA region. Microclimates play a big role in distinguishing these landscapes that are greatly influenced by the marine layer all year round. Average annual precipitation varies from 19 inches in the north near the Central Coast to 13 inches in South Orange County, changing with elevation.

Joanna Woollcott, Yucaipa



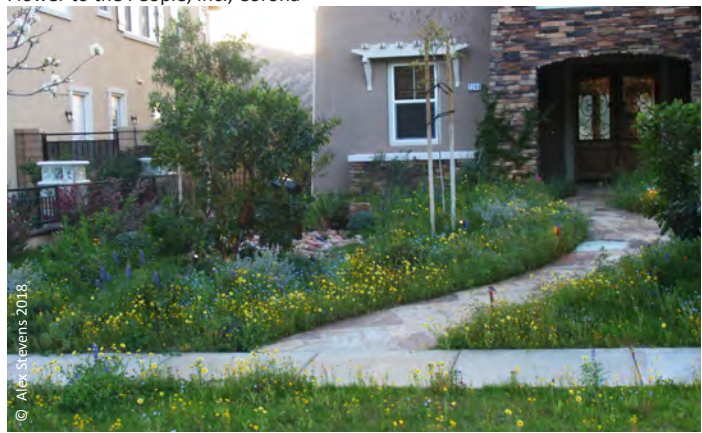
© Joanna Woollcott, 2018

Anna Harrington, Thousand Oaks



© Anna Harrington, 2018

Flower to the People, Inc., Corona



© Alex Stevens 2018

Julie Molinare, Valencia



© Julie Molinare, 2018



© Andrea Doonan, 2018

San Diego Gardens

Andrea Doonan, San Diego

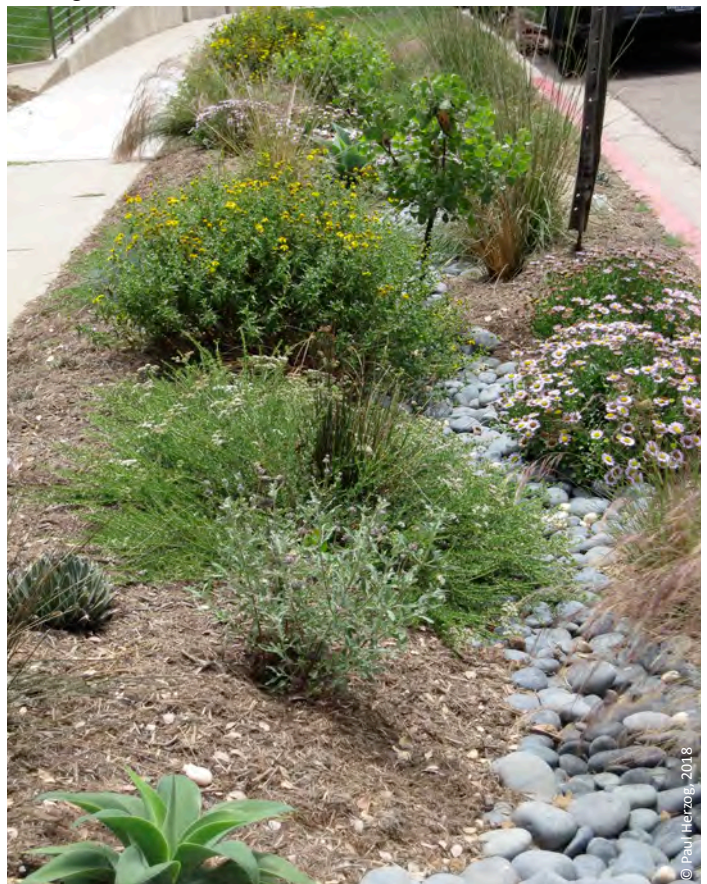
The San Diego Region also has six climactic zones ranging from Coastal to Desert and everything in between, including Mountainous areas. Annual rainfall ranges from 3 to 4 inches inland to 9 to 11 inches at the coast. The City is predominately influenced by the ocean and cold air that comes down from the mountains to the mouths of the many canyons cutting through the San Diego terrain. These canyons create special microclimates and are critical to the area's storm water management. At higher elevations, places like Julian experience 27 inches of rain and 16 of snow annually; this is perfect weather for stone fruits and apples. Alternatively, the Imperial Valley low desert is hot and dry all year round.

Amelia B. Lima & Associates, Inc., Rancho Santa Fe



© Amelia B. Lima, 2018

San Diego Surfrider OFG, Encinitas



© Paul Herzon, 2018

Botaniscapes by Tracey, El Cajon



© Tracey Grillo, 2018



© AAmeilia B. Lima, 2018

Amelia B. Lima & Associates, Inc., San Diego

Fostering Biodiversity is critical to the San Diego region, as San Diego, east Riverside, and Imperial counties boast many endemic species of plants and animals that currently are threatened by habitat loss. Most of this loss has been created by human intervention, predominately caused by the paving of surfaces and development in and around canyon areas. Scarce riparian habitat has been significantly affected as drought, polluted runoff and disturbance alters both water quality and native plant communities that support native fauna.

Amelia B. Lima & Associates, Inc., Escondido



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Botaniscapes by Tracey, El Cajon



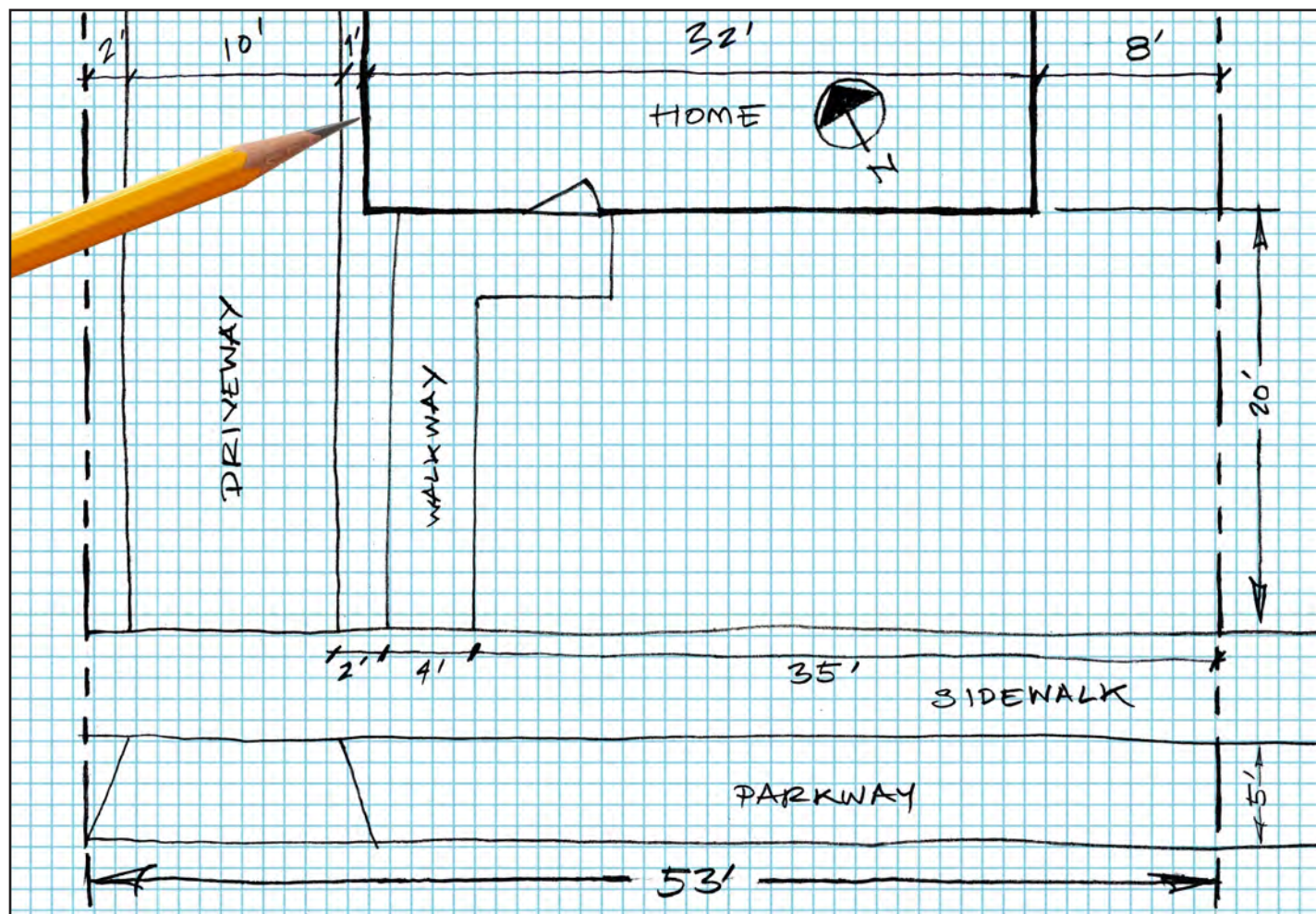
© Tracey Griffin, 2018

Gravel To Gold, Del Mar



© Steve Gold, 2018

Start with a Site Plan



© G3, Alex Stevens, 2018



Measure to Make Your Site Plan

Measure your site. Once you've got the dimensions, trace the lines cleanly on a sheet of grid paper. Make at least 10 copies that are dark enough to still see the grid. You will use each of these sheets to evaluate and plan the changes for each aspect of your landscape.

Depending upon the size of your property, most projects can use a 1/4" = 1' scale. Try using 1 box = 1 foot.

Mark the locations of trees and large shrubs you are unlikely to remove. Label any hard surfaces like driveways and walkways.

Take some photos and mark where they are located on your site map. Use your smartphone or a compass to find North and also mark it on the map.

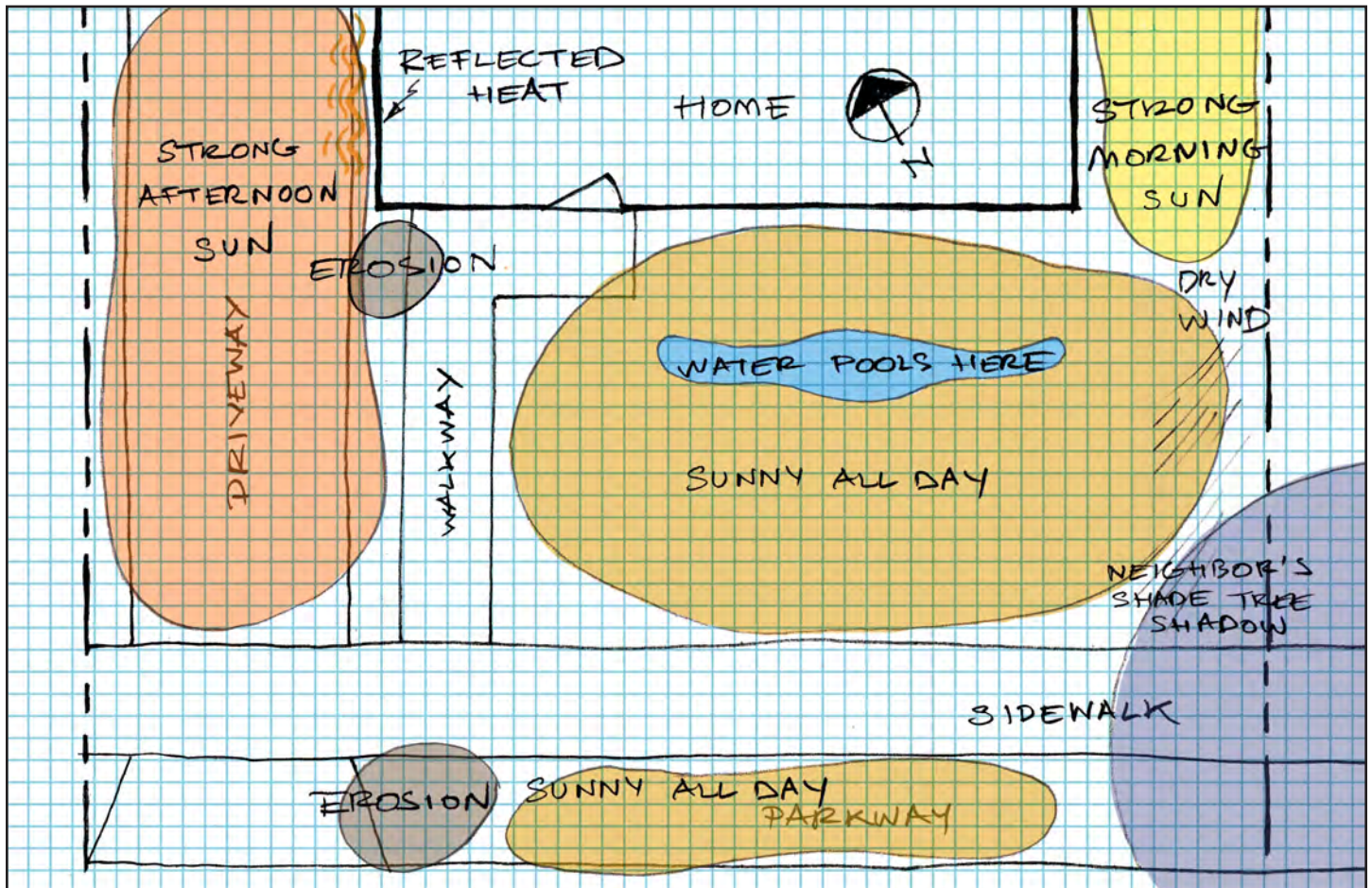
Mind The Foundation

Be sure to mark your doors, windows and footprint of your building on your plans. You will be grading the soil away from foundations and locating your mounded up berms and swales 5' - 10' away from the foundation of the buildings and 3' from edges of the walkways.

Need help finding dimensions? maps.google.com

Look at Google Maps for help placing buildings or trees on your property. Just type in your address, zoom in, and use the Satellite view.

Consider your Microclimates



© G3, Alex Stevens, 2018

Microclimates are **Climate** factors **Particular** to your garden.

Every garden has areas where some plants will grow well and others will die. Structures, walls, fences, and other plants all can affect the amount of sun and shade in a garden. And every garden is completely different, even if it is located in the same general climate zone. There will be hills and hollows in your front yard that may collect cold air or, because your property is sloped, you don't get frost when your neighbors do.

Microclimates may DIFFER significantly from the general climate of an area. You need to map these microclimates, and the first step is to walk around your property during the day and observe it more closely. Grab a chair, sit down outside, and start thinking about your design priorities.

Note Sun and Shade

Mark the areas that receive sun all day and areas that are shaded all or part of the day. Also note which areas receive only partial sun, maybe just a few hours of direct morning sun, mid-day or in late afternoon.

When you start choosing your plants, make sure to select those that are appropriate to your garden's sunlight patterns. Plants marked as "full sun" will not be happy in full shade or vice versa.

Are there other things you observe in your garden? Mark it on your Site Map!

Which Plants Will You Keep?

Now is the time to decide which plants will work well in your new garden and which should be removed. Outline the canopy area of each plant you are keeping and note with the name, general size and health of the plant. If you don't know the name of the plant, take a photo and leaf/flower to a local nursery to get some assistance.

Which of these plants seem thirsty and which are not? Many plants can be unthirsty if they are well established, with deep healthy roots (old rose bushes, mature camellias or very large shade trees, for example).

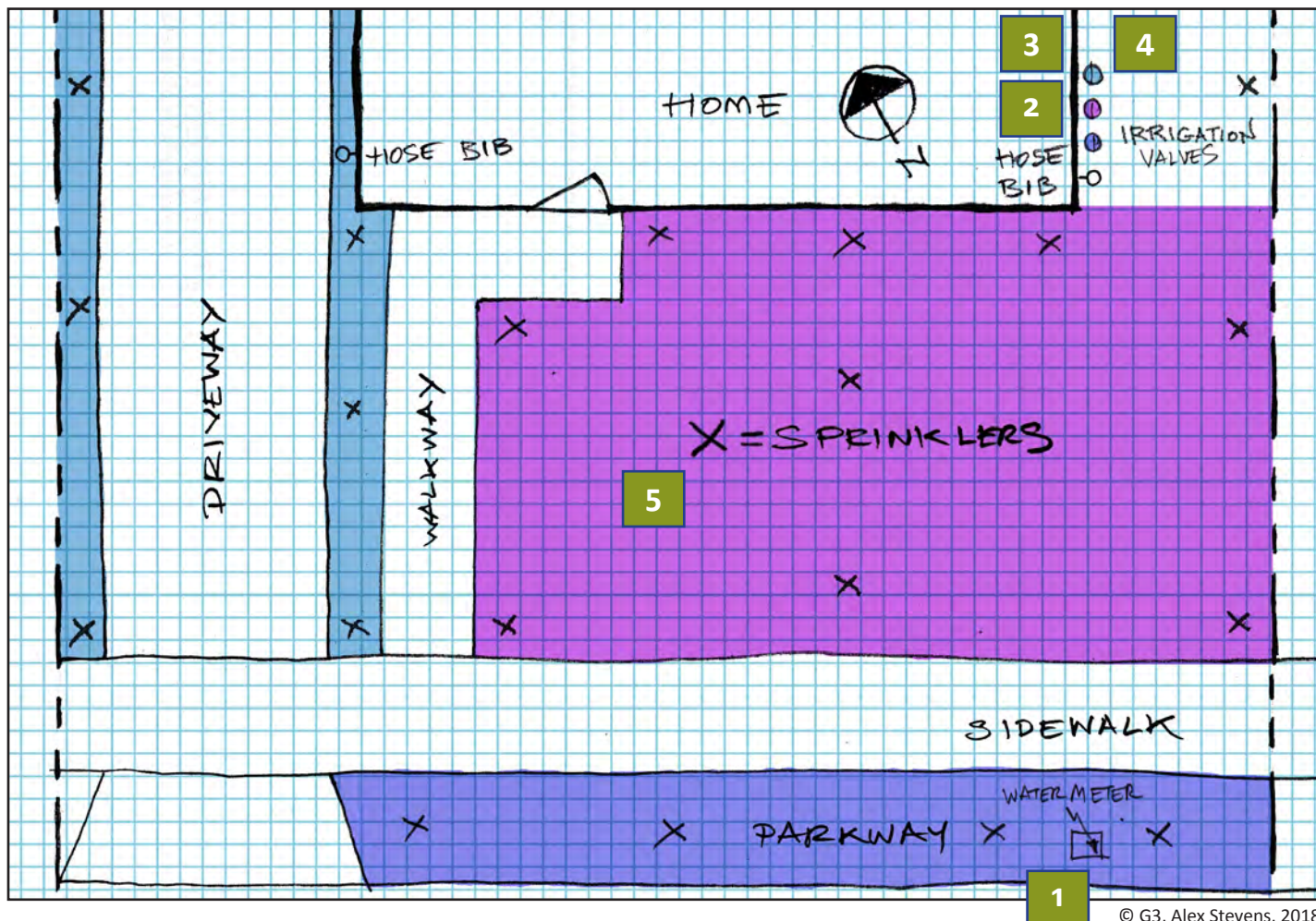
What Are Your Design Priorities?

Think about how you want to use your space and make notes on your Site Plan.

Consider how much maintenance you want to take on. Do you want to use or lose the lawn? Would you like fruit trees or edible shrubs? Are you falling in love with California native plants?

Consider how you move through the garden. Do you want a patio near the house, or out in the yard? Would a nice wide pathway make your home more welcoming? Does enclosing the front yard make the most of a small space?

Evaluate your Existing Irrigation layout



Make A Plan of your irrigation system.

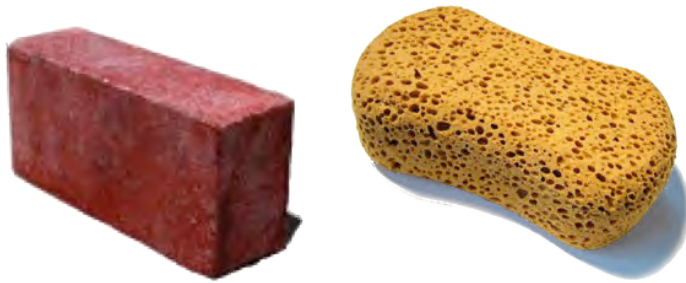
Start the discussion about whether or not to abandon your existing irrigation by mapping out the components of the system. If you have lawn, chances are that your existing irrigation is a spray sprinkler system with an automatic irrigation controller. If you are renovating most of your landscape, be prepared to start from scratch rather than try to significantly alter the existing irrigation system. This way you have an opportunity to use the latest technologies and proper design for your new garden. It is especially difficult to match existing irrigation to new plants grouped by water needs (see pp. 33, 37) or new permeable hardscape that replaced previously planted areas (see p. 28).

Locate all of the sprinkler heads on your property and mark their locations on a copy of your Site Plan. Note where the water comes on to your property from the street (the water meter/main line), the location of your irrigation controller, and the location of the valves that control the various irrigation zones. Also, mark the location of hose bibs, shut off valves, and pressure regulators or backflow prevention devices.

Now color code the areas that spray with each valve so you easily can see the various zones you are dealing with for replacing plants and irrigation. Our front yard example (above) has three separate zones marked by three different colors.



Test your soil



Is your soil a **Brick** or a **Sponge**?

If you have a brick you will need to take this into consideration when planning your contours. You will need to spend some time and effort to turn the soil back into a sponge. If the soil does not drain well, you will need to take special care when you plant that you do not drown your new plants.

We want to have soil in our landscape that can capture water and allow it to soak into the plant root zone within 24 - 48 hours. Building **Living Soil** therefore becomes important in our plan to capture rainwater and save it for a dry day, so you will need to follow the Soil Lasagna Recipe (see pp. 22-23).

Before we figure out how to grow better soil, we need to figure out what kind of soil we have. Sand, Silt and Clay, are the basic soil types. The smallest particles create clay soil and the largest make sandy soil, with loam (an even blend of sand, silt and clay) considered the "just right" medium. Professional designers will take soil samples and send them off to a lab for recommendations.

You Will Need:



Percolation Test

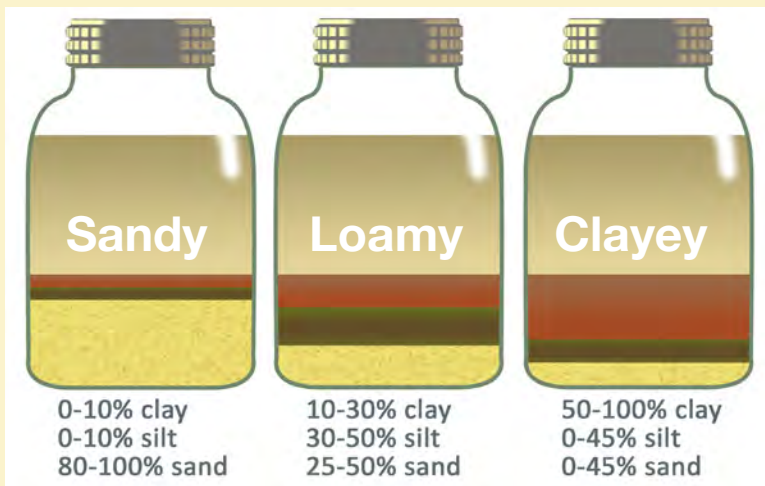
1. Dig a hole about 12" deep and 12" wide (that's a little larger than a 1 gal. plant container).
2. Fill the hole with water and wait. Note how long it takes to drain completely. This is necessary to completely saturate the soil.
3. Fill the hole all the way when all the water has drained out from first filling, and see how long it takes to drain out again.
4. Lay a stick or shovel handle across the hole and measure the distance from the top of the water to the stick each hour until it has drained completely.

Results:

>4" per hour - You have sand and need to add more organic matter to improve the soil (see pp. 24-25).

<1" per hour - **You have a brick!** Your soil needs some extra help so try sheet mulching (see pp. 22-23).

1" - 4" per hour - Congratulations! Your soil drains well! **You have a sponge!**



Determine Soil Type Using A Jar Test

(This is fun to do with kids!)

You Will Need:

- 1 Qt. size glass container with lid
- 1 Cup of soil from the garden (Select one area per container, or take samples from several holes and blend them together.)
- 3 Cups of distilled water
1. **Add soil and water together** in the glass container and shake until all solids are suspended in water.
2. **Place container on a shelf** and wait 24 hours.
3. **Wait another 24 hours**, if the container is still cloudy. After 48 hours, the layers should be settled: **Sand** on the bottom, **Silt** in the middle, and **Clay** on top.
4. **Measure the layers** in proportion to each other.
5. **Use the graphic** to determine the Soil Type based on the proportions of Sand, Silt or Clay.

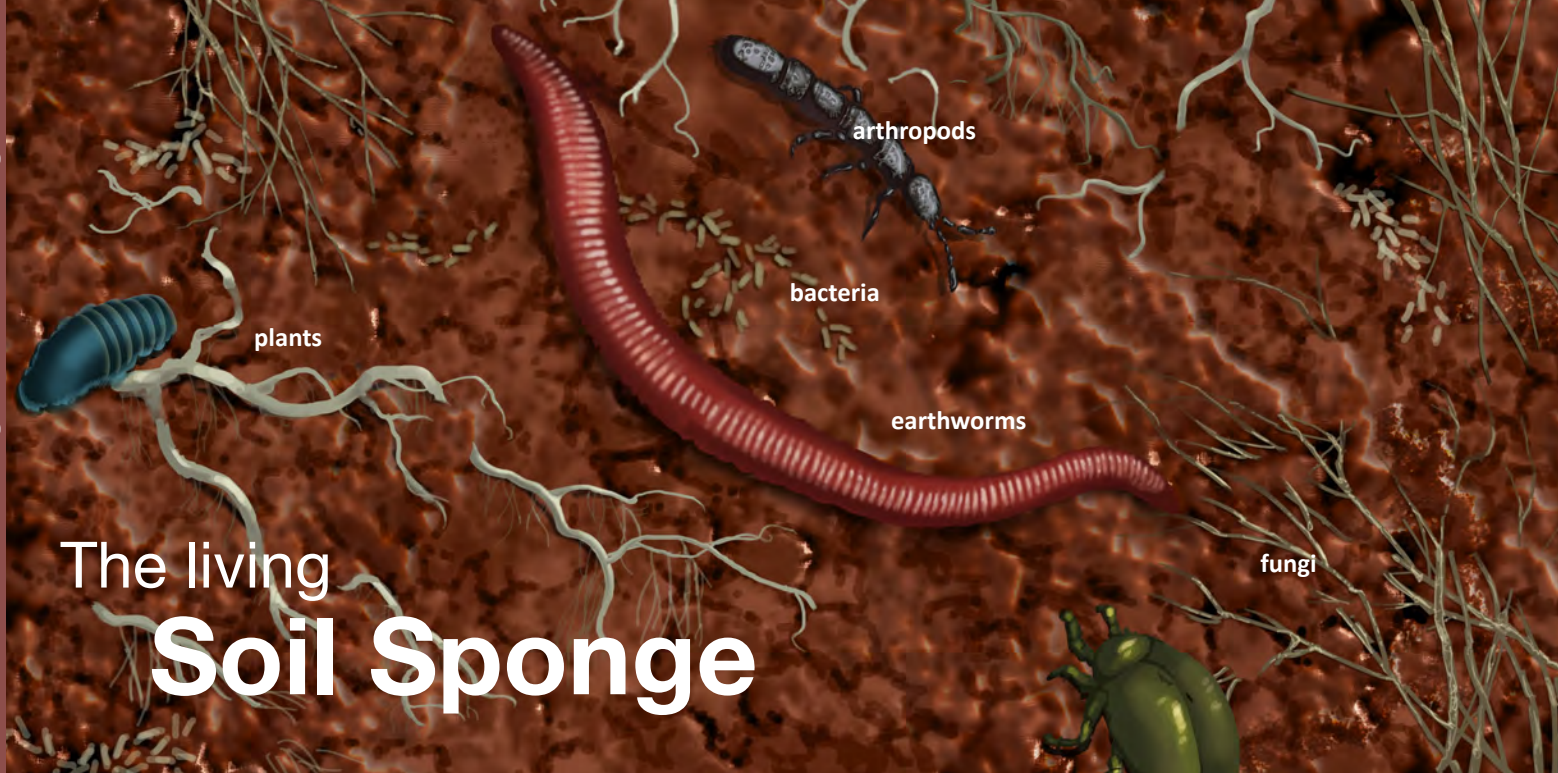
Which jar does your sample most look like?

For Example: If there are equal proportions of Sand and Silt, and very little Clay, then the proportions are something like 40% Sand and 40% Silt and 20% Clay.

Loam best describes the jar with 40% Sand, 40% Silt, and 20% Clay.

Your soil is Loam.

Determine your Soil Type so that you can better program your "smart" irrigation controller and so you can select plants best adapted to your site.



The living Soil Sponge

© G3, Alex Stevens, 2018

OWL (Oxygen, Water and Life) makes **Living Soil**.

Living Soil is alive, and it is essential to a healthy garden. A teaspoon of good garden soil contains billions of invisible bacteria, several yards of equally invisible fungal hyphae, several thousand protozoa, and few dozen beneficial nematodes. Microbes bind soil together and, when OWL is balanced, billions of microbes work in concert with the roots of plants to be the change agents that transform brick-like dirt into a healthy, living soil sponge.

Oxygen is needed by healthy plant roots and soil organisms. Healthy soil has lots of little pockets filled with air. When soils are eroded, graded, or disturbed, their structure becomes compacted. Compaction is caused when the tiny air and water bubbles are squeezed out of the soil and the microbes are killed or demobilized. Microbes can be killed by fertilizer and pesticide use or even heavy traffic (foot or vehicular).

Water is needed by both plants and microbes. But too much water in the soil displaces the oxygen, saturating the soil and creating an anaerobic (no oxygen) condition. Pathogenic microbes prefer anaerobic soil, and if this condition persists, diseases may develop, thus endangering the health of your garden.

Water is constantly moving through the soil. Any water in the soil needs to be replenished as the plants use it, as it evaporates from the soil surface, and as gravity pulls it down past the root zone.

Life in the soil includes all of the bacteria, protozoa, nematodes, and fungi, the food they eat, the excretions they make, and the root systems they sustain. Adding good quality compost into the soil is the fastest method of incorporating living microbes.

Plants act like microbe farmers, attracting microbes to their roots by feeding them carbon. Plants know what they need in order to grow strong and stay healthy, and they can target members of the microbial community with specific compounds in order to get what they need at the exact time when they need it. These billions of microbes all need water and oxygen, so there is a lot of jostling around, creating miniscule air pockets. Bacteria and fungi hold the soil together with microscopic superglues and binders. Carbon and other nutrients are cycled through these many life forms, creating healthy, living, well-structured soil, no matter what the base soil type.



Use a Soil Probe

A soil probe allows you to determine a lot of information about your soil. It will come in handy when you are trying to figure out whether water is reaching the plant roots or even going too deep beyond the roots' reach.

Press the probe into the ground, twist and pull out to take a sample. Take multiple samples from around your garden. How deep are your plants' roots?

Use this kind of probe on a regular basis if you are maintaining your landscape. It is a quick tool for determining whether or not your irrigation schedule is providing enough water.

Purchase a soil probe online or at your local irrigation warehouse; or ask your designer to purchase one for you.

Grow a great soil **Sponge**

Try to avoid excessive disturbance of the soil. But, if it happens, make sure you add **Oxygen, Water** and **Life** in the form of really good compost as soon as possible to get the soil critters working again. Good organisms turn dirt into a great living soil **Sponge**.



Eliminate **Compaction** by loosening soil.

If you can press a pitchfork into the soil, then that is all you need to do to create air holes.

If the soil is heavy clay, then augering or tilling may be necessary. Immediately after augering heavily compacted areas, fill the holes with good compost or earthworm

castings. Then water the whole thing thoroughly to get the biology processes kickstarted. Remember that augering and tilling damage the biological network already existing in the soil, so they should be employed only when absolutely necessary. **If you have a lawn, aerating twice a year will help eliminate compaction.**

After decompacting, two essential practices for maintaining soil oxygen are:

- 1) Feed the soil good organic matter.
- 2) Manage water so things don't get too saturated or too dry.



Water Wisely, first with rainwater.

Rainwater lacks chloramines and is slightly acidic, providing the perfect chemistry for both plants and microbes. It should be directed into landscapes at every opportunity.

Irrigate only to maintain the water balance in soil (see p. 38). Too much water saturates soil and results in the anaerobic conditions that promote diseases. Too little might result in microbes drying up or going to sleep. When microbes are no longer cycling nutrients for the plants, the roots will die and the plant might too.



Feed your soil.

Organic matter improves the water holding capacity of soil. You can get organic matter from a wide variety of sources, including compost and living mulch. Once you get things started, plants manufacture their own soil-building organic matter by dropping leaves, blossoms, and other debris.

Mulch, compost and compost tea can be applied to the surface of the soil and used as amendments during planting and soil preparation (see pp. 24-25).

Ornamental plants do not need to be fed with fertilizers (even organic ones) if you maintain OWL. Fertilizers make the plants lazy about attracting microbes to cycle nutrients; this diminishes the plants' immune response and may compromise their resilience, particularly if they are put under stress from drought or pests.

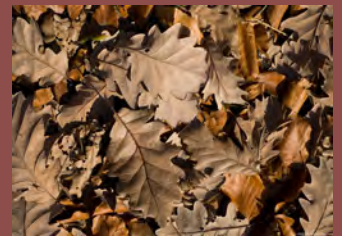
No Weed Cloth!



© Jodie Cook, 2018

It looks like weeds grow right through weed cloth. Weeds are actually encouraged because OWL is kept from happening when the organic matter from fallen leaves doesn't touch the soil.

Leaf It in Place



Keep leaf litter and grass clippings on the soil surface, under the plants from which they fall, instead of removing them during maintenance. Be careful not to pile up leaves or mulch against the trunk of the plant.

Ban the Blower



The last thing plants need is hot, dry air noisily blowing dust around. Stop drying out your garden and use a rake for everything but the largest hardscape areas where an electric blower might be used judiciously.

Tea for Two



Compost tea and worm castings offer a microbe jump start, providing many benefits of compost in an easily-digestible aerated liquid (compost tea) or dry form (worm castings), already teeming with life.



Lose your lawn
and **Build Healthy Soil**

© Marilee Kuhlmann, 2018

Marilee Kuhlmann, Sherman Oaks

Sheet Mulching makes **Soil Lasagna**.

We call this lawn removal process Sheet Mulching, or Soil Lasagna, because we layer materials that living soil organisms eat up and convert to soil. Once you've made the Soil Lasagna, all you need to do is keep the system moist so the microbes can stay awake and cooking. How long this will take depends on the kind of grass you have. If you have warm season grass, you will have to cut it out, but you can plant right away. If you have cool season grass, you can leave it in place, but it will be a while before it's ready for you to plant into the yummy soil you are creating. Ask your designer to identify the grass in your lawn before choosing the best way for removal.



You Will Need:

- Shovels and Rakes
- Bins for removed grass and soil
- Landscape flags
- Hose with shut off nozzle at end
- Compost, Worm Castings, or Compost Tea

- Wheelbarrow(s)
- Mulch
- Painters' Paper or big sheets of Cardboard
- Water (LOTS!)

Secure Your Permits

Call DIG ALERT (8-1-1) two days in advance, and check with your local water agency for any water use restrictions.

Rent a Dumpster

For every 1,000 sq. ft. of turf removed you will need 1 low-boy (10 yard capacity) dumpster.

- 1 After you have checked for permits and any local water use restrictions, deal with the lawn you have. If it's cool season, mow it to about 1/2" height, say goodbye and soak it thoroughly with water. Then go to #3. If you want to cut out cool season grass, go to #2.
- 2 If you have warm season grass, rent a sod cutter and remove the grass and 2-3" of roots beneath. The result is that you will be removing about 6" of grass and soil. Unfortunately, this must be hauled away, so you will need to rent a dumpster.



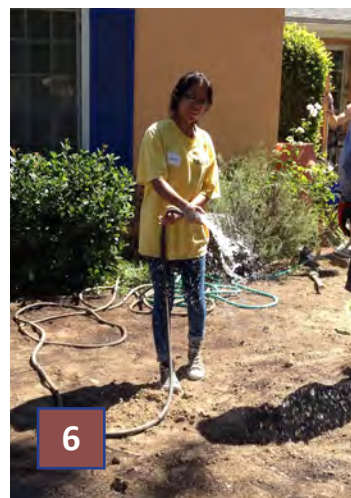
3



4



5



6

- 3 Dig a trench 8-12" deep (about 1 shovel depth) and at least 12-24" wide around all hard surfaces and 6" deep along building foundations. **Before moving on, complete your contouring for rainwater absorption and retention and any landscape alterations such as paths, patios, or other features (see pp. 26-29).**

- 4 Flag your sprinkler heads so you can find and adjust them later. Or, be prepared to abandon and replace the irrigation system.
- 5 Add a (1/2" to 1" deep) layer of compost on top of the graded soil. Alternatively, use humates, a sort of freeze-dried compost available at some landscape supply stores, or spray with compost or worm tea. You are adding good instant microbe food and some living microbes to the soil!



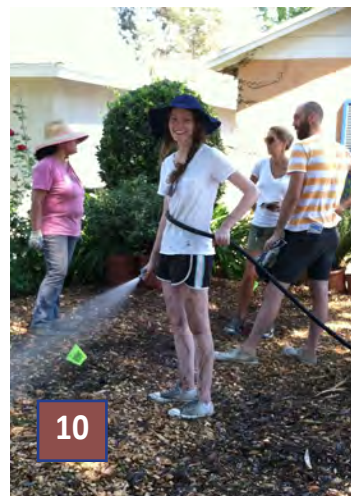
7



8



9



10

All photos this page © G3, Green Gardens Group, 2018

- 6 Water everything well. Wake up microbes! Let's get the soil party started!
- 7 Roll out painters' paper, cardboard or other paper. Overlap at the seams by at least 6". No naked soil!
- 8 On the hardscape edges, make a "burrito" of rolled paper and mulch to keep grass from resprouting immediately.
- 9 Water the paper again and add another layer of compost here, if you'd like. Rake a thick blanket 4-6" deep of finely chopped, mixed leaf and wood mulch over the paper or compost.
- 10 Water the mulch thoroughly. This mulch layer will absorb more water than you ever thought possible to become soaked through. Don't despair; just keep slowly watering!
- 11 Plant right through the layers (see p. 35). The longer you wait to plant, the tastier the lasagna will be for the new plants, but you can plant right away if you removed the grass. **If you kept your cool season grass in place, count on waiting 3-4 months before planting. Make sure your HOA is ok with the time frame.**
- 12 Step back and admire your work! Have a glass of lemonade too; you earned it!

Keep adding **Compost** and **Mulch**



Compost is a soil amendment.

Compost looks like soil. You cannot tell what it once was. That is because it is food scraps, landscape debris and/or manure from livestock, or biosolids (human manure) and other organic matter that already has been partially consumed and mostly decomposed by micro-organisms. Good compost brings oxygen, water and life in one package.

How to Use Compost. Compost can be store-bought or homemade. When compost looks like soil, it can be worked directly into the soil. The more coarse or visible the bits of the compost are, the more likely it is to be used as mulch on top of the soil rather than as an incorporated amendment.

Compost works its magic in several ways. First, the compost itself contains particles that improve soil structure. Next, as compost decomposes in soil it encourages microbes to start the formation of healthy soil aggregates. These resulting aggregates are composed of existing soil particles and decomposed organic matter, which combine to create a more stable and better functioning soil structure like a sponge.

Mulch is a soil topping.

Mulch may be organic or inorganic material that covers soil and looks like the recycled debris that it is. Mulch can be made from organic debris (grass clippings, leaf litter, and shredded wood trimmings) or inorganic materials such as gravel or decomposed granite.

Mulch protects soil and plant roots from temperature change, keeps moisture in by slowing evaporation from the surface of the soil and keeps weeds from sprouting by reducing sunlight penetration to the soil surface.

How to Use Mulch. Mulch always stays on top of the soil, and is never worked in. Recycled organic debris is the most effective type of mulch, because it builds soil structure over time and provides a durable, protective surface barrier. The smaller the debris and the more mixed leaves with wood chips, the faster it decomposes. When building soil, small and mixed is best. Don't bother with inorganic mulches like rubber, gravel, or decomposed granite in planted areas. These are only applicable in pathways or gathering areas; they don't help grow good soil.

Need help buying amendment? www.buy-compost.com

MAKE IT

Less than 5 Cubic Feet



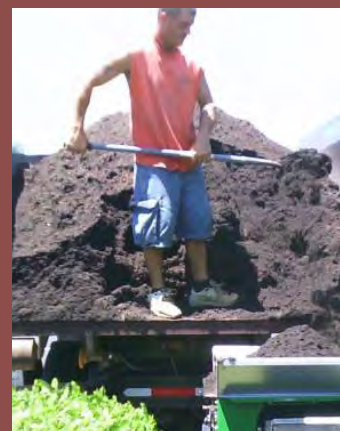
BUY IT IN BAGS

Between 5 and 25
Cubic Feet

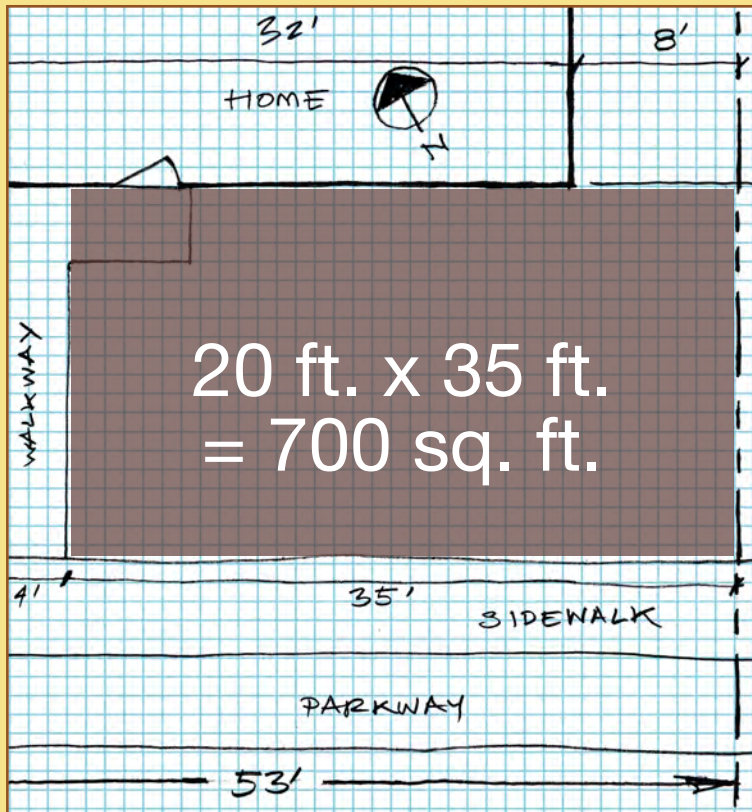


BUY IT IN BULK

More than 25 Cubic Feet or
1 Cubic Yard



How **Mulch** does your garden **Need?**



© G3, Alex Stevens, 2018

Add Organic Matter

Add 1-3" of compost to improve the water holding capacity of soil by 30%.

Place 4-6" of mulch on top of the soil to hold in moisture and keep down weeds when planting, and maintain 2-4" of mulch on beds at all times thereafter.

Keep mulch at least 1-6" away from the stems of plants.

Calculate the Material Requirement

Start with the **Square Footage (SF)** of space to be covered and figure out how much you will need for **1 inch of material**.

$SF \times 1 \text{ inch} \div 12'' = \text{Cubic Feet (CF)}$ of material needed. (Dividing by 12" turns your inch of amendment into feet of amendment.)

If you need less than 20 CF of material, you can probably make it in a compost pile or purchase it in bags.

If you need more than 25 CF of material, you must convert your materials to Cubic Yards, because you are going to have to have it all delivered in bulk.

$CF \div 27 = \text{Cubic Yards (CY)}$.

So, $25 \text{ CF} \div 27 = \text{about } 1 \text{ CY}$ of material needed.

Applied to Our Site Front Yard:

$700 \text{ SF} \times 1'' \div 12'' = 58 \text{ CF}$ for each 1" of mulch.

If you need 2", you multiply the amount needed for one inch by 2 and if you need 6", you multiply the one inch total by 6.

We need 4" of mulch = $58 \text{ CF} \times 4'' = 233 \text{ CF}$

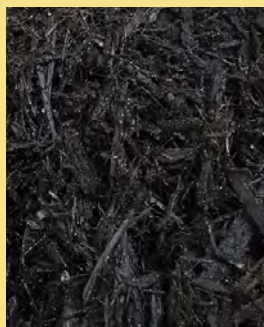
For our front yard, that is $233 \text{ CF} \div 27 = \text{about } 9 \text{ CY}$ of mulch. That sounds like a lot of material! It looks like we will have to buy it in bulk (see p. 24).

Avoid These Mulches Around Plants

While these mulches are commercially available, they don't decompose to feed the soil microbes. Although 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. Also try to avoid mulches filled with plastic or other debris.



dyed wood mulch



dyed wood mulch



gravel



rubber



Contours for Rain Capture

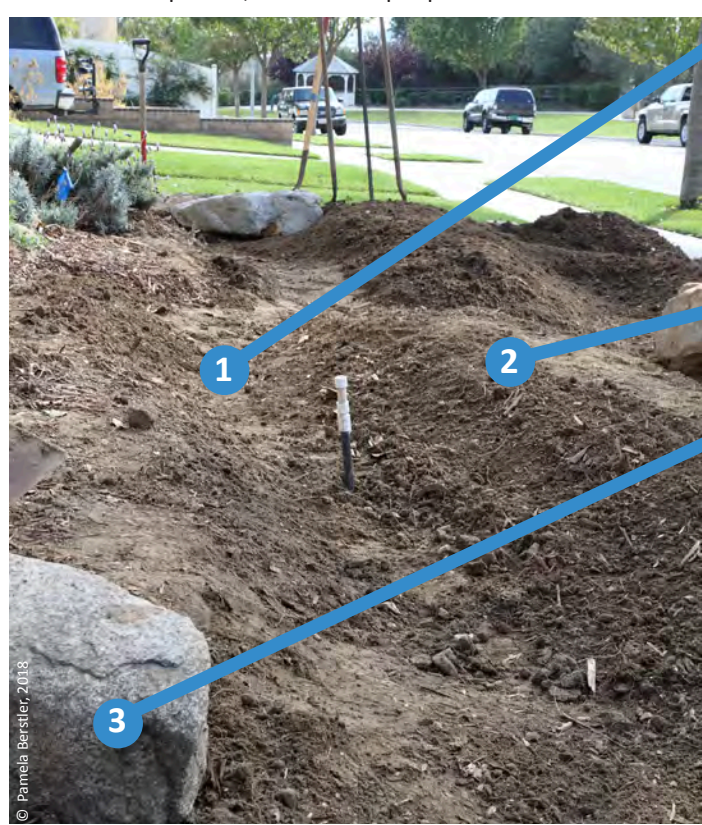
© Paul Herzog, 2018

Homeowner John Huber, Ventura

Every garden can become a **Sponge**.

Many front yards are just flat lawn, but this space could be a last chance to capture and filter your seasonal rain before it runs into the storm drain and right into creeks, rivers and eventually, the ocean! By contouring the land to hold on to at least the first inch of rain after a dry period (known as First Flush), we create landscapes that are far more interesting than flat expanses of lawn, and provide an opportunity to create conditions for some of California's most interesting native plants.

Meet your **Contour** (aka Swale!) Sounds fancy, but really, it's very simple. Your Contour is just a little soil basin to slow, spread, and sink the first inch of rain water from your roof into the plants in your front yard. Direct your downspouts into the depression. Your soil and plants will thank you! It's all part of creating a truly watershed wise landscape. There are two main components: **Basins & Berms**. **Boulders** are optional, and a lot of people like the look of them. But, if you don't like the rock, skip it, and just add mulch.



© Pamela Berstler, 2018

Basins and Swales are shallow depressions, or channels no more than 6" – 24" deep, on gently sloped or nearly flat landscapes that move water around over short distances. The plants in and around the depressions capture and sink small volumes of surface water. Small, shallow depressions (6" - 12") are best used in clay soil areas, while sandy soils may accommodate the deeper (up to 24") depressions. Channels can be filled with mulch, planted (vegetated swales), and/or lined with rocks and small boulders to resemble natural water features.

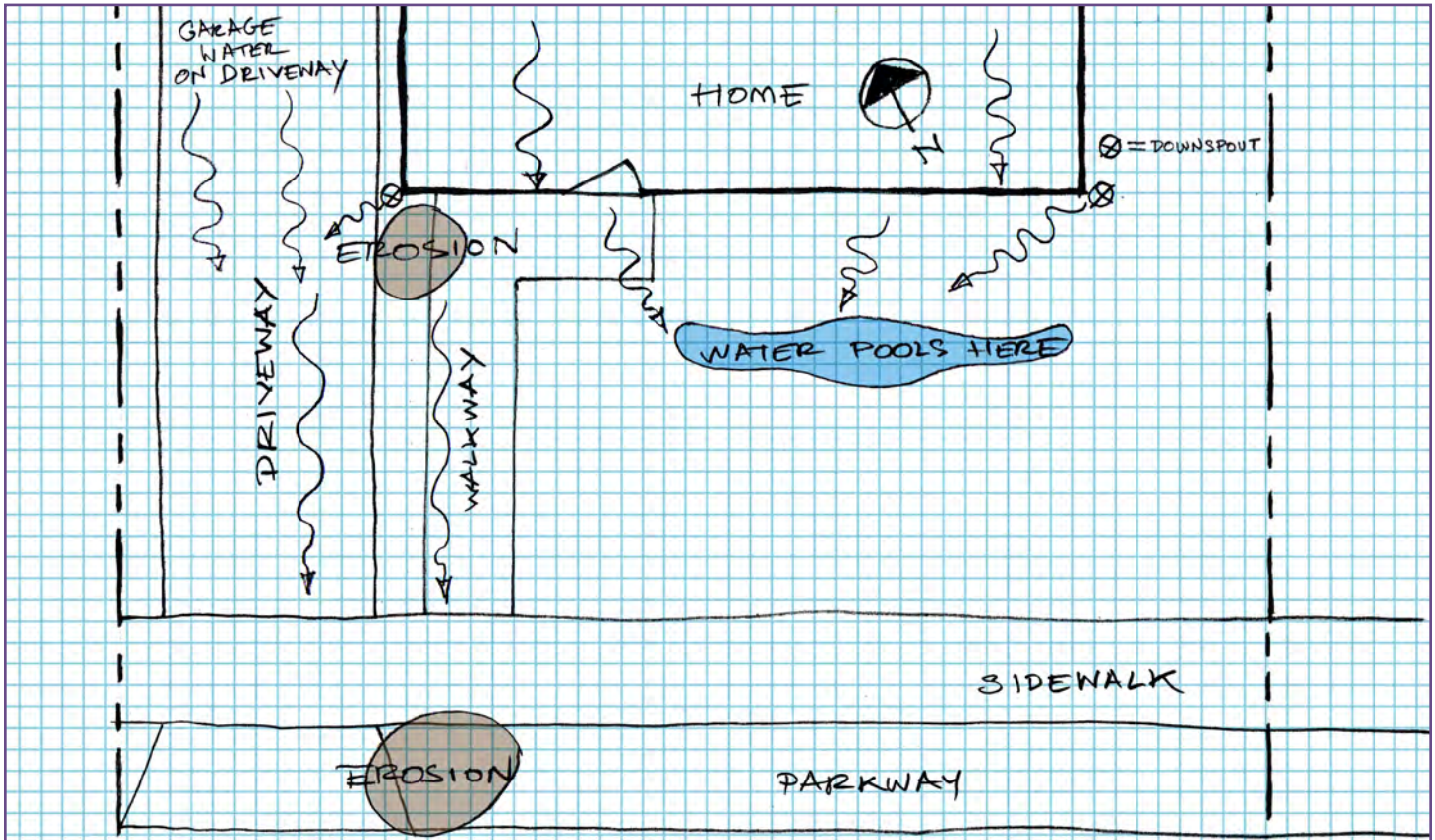
Berms are mounds of raised soil, usually planted, that can border basins and swales or be used alone. Berms help contain and move water around, increasing the holding capacity of basins and swales.

Boulders may be used to retain small berms or edges of swales and to create "dry creekbed" interest in the landscape.



© Paul Herzog, 2018

Imagine your yard is a **Mini-Watershed**



© G3, Alex Stevens, 2018

Your **Roof** is the **TOP** of the Watershed.

Make a Copy of Your Site Plan and Label It "Water Plan"

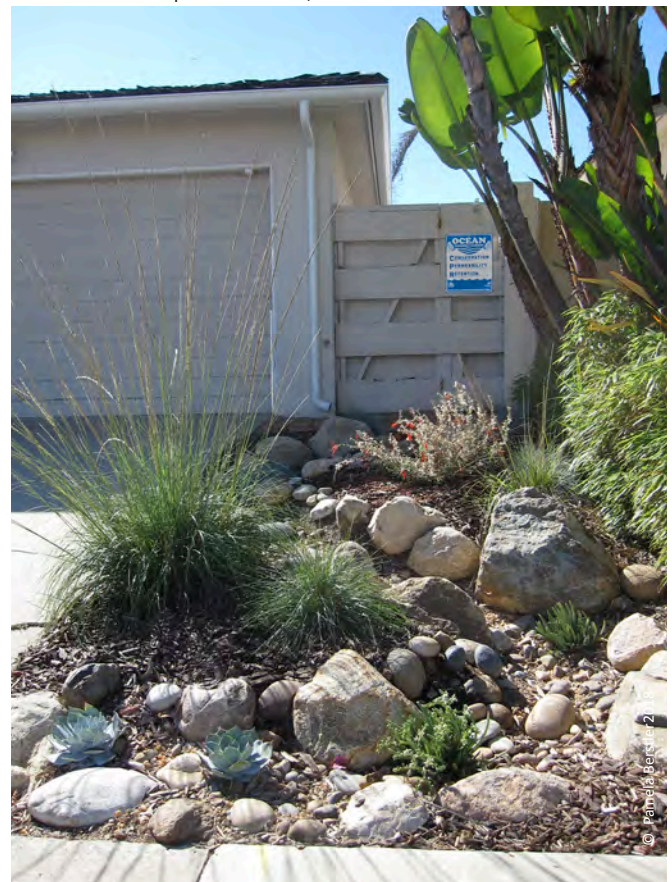
Watch what happens to water as it comes off the roof of your home and moves across your property. Your roof is the **Top** of your mini-watershed and where the water finally runs off your property is the **Bottom**. Think about how you can capture water in between the top and bottom of your landscape.

Begin to separate out each area that deposits water into a downspout. Mark the location of each of your roof gutters and downspouts.

Once you know the total area of the roof, you can figure out the amount of rainfall that it generates (*see p. 29*).

- Do you have low spots in which water pools?
- Does water run off the property anywhere?
- Does water run onto the property from a neighbor or street?
- Do any buildings or any hard surfaces appear to be water damaged or eroded? If so, does it appear to be a result of rain, irrigation, or both?
- Note the direction of water as it moves around the property.
- Turn on the irrigation for no more than 5 minutes and note whether there is pooling or runoff (*see p.39*).
- What parts of the roof divert water into downspouts, and is the water being diverted into your landscape? Indicate the direction of the water with arrows as seen above.

Artemesia Landscape Architecture, La Jolla





Slow, Spread, Sink and Store

Tom Rau, Los Angeles

Five Great Permeable Hardscapes



1



2



3



4



5

- 1 Sand set pavers
- 2 Porous concrete paving
- 3 Interlocking pavers
- 4 Gravel
- 5 Grooves cut into brick path

photos 1,3,5: © Pamela Berstler, 2018

Slow It! Replace downspouts with rainchains to slow down the water, so it is more easily absorbed when it reaches landscaped areas. Add a rain barrel or cistern at the bottom of the downspout or rainchain and direct it to overflow into the garden.

Don't Have Gutters? Cover areas under eaves with permeable groundcover such as pea gravel, mulch, or rock to reduce the compacting force of water falling on bare soil. Spreading fresh leaf and wood chip mulch throughout the garden will slow down water. Healthy soil, bound together by the structures its life creates, can withstand even the strongest rains.

Spread It! Water needs to be spread around to spend some time in your landscape. For new construction, always specify permeable hardscape. Consider breaking or cutting up impervious surfaces like patios and walkways and rearranging the concrete with gaps between the concrete or puncturing it to create planting areas. Paved area drains also can be redirected from storm drains into the garden.

Sink It! Trust the soil sponge to do its job. Existing impermeable surfaces that cannot be transformed should be treated as water capture areas, where water is collected before it is guided to the garden. If you are not able to capture and hold the water on site, then concentrate on making sure that it passes through as much of the natural landscape as possible before it moves off your yard and becomes runoff.

Store It! Rainwater also can be directly harvested and stored. Storage vessels include rain barrels and cisterns directly connected to downspouts. Stored water gradually can be released into the landscape between winter rains. Properly sited trees are an excellent landscape feature for holding rain temporarily and allowing it to be released slowly over time. Check with your local water agency for available rebates.

Capture First Flush

First Flush is the **First Inch of Rain** after a dry spell.

This is the most important water to capture in your landscape. The first rainfall washes away pollution that has gathered on hard surfaces during the dry spell, and it needs to be filtered by the living soil and root zones of plants before it goes anywhere else.

Calculate How Much Water Comes Off Your Roof

The shape of your roof doesn't matter in the calculation of water it produces. A pitched roof and a flat roof have the same footprint and the same amount of rain falls on the total roof area. Just measure the outside edges (the footprint) and calculate the square footage as you would any landscape area.

Area of a Rectangle = length of side A x length of side B

Some roofs are flat, and therefore easy to calculate. For complicated roofs, divide the area into squares and add up the area of each square.

Once you know the total area of the roof, you can figure out the amount of rainfall that it generates in gallons. 0.62 is a constant that converts square foot inches into gallons.

Rainfall (in Inches) x Roof Area Square Feet x 0.62 = Gallons of Rain Water From Your Roof

You can use these calculations to determine how much water comes off any hard surface (patio, driveway, sidewalk, etc.).



Mary Fisher, Alameda



How Much water per downspout?

First figure out how much water is coming from the whole roof, and then divide the roof into sections and calculate the particular amounts falling from each downspout:

Rainfall (in Inches) x Roof Area Square Feet x 0.62 = Gallons of Rain Water From Your Roof

If your roof is 1,000 square feet (SF), here's how much water runs off it:

- 1" (rainfall) x 1,000 SF x 0.62 = 620 gallons
- 10" (typical coastal total rainfall) x 1,000 SF x 0.62 = 6,200 gallons
- 30" (typical foothills total rainfall) x 1,000 SF x 0.62 = 18,600 gallons

It adds up quickly, even in dry areas. Try to save as much as you can in your landscape sponge!

Imagine the water from your garage roof splits into two downspouts and Your Total Roof Area is 20' x 50' = 1,000 SF

If half of the water goes into each downspout, then the roof size for one downspout is: 1,000 SF ÷ 2 = 500 SF

Now calculate how much water that is in gallons from each inch of rain coming from one downspout:

1" x 500 SF x 0.62 = 310 gallons of water per inch of rain per downspout.

© Pay | Herzog, 2018



Ocean Friendly Gardens



San Diego Surfrider OFG, Oceanside

Apply **C.P.R.** (Conservation, Permeability, Retention) to revive our nation's waterways and protect our beaches and oceans.

The Surfrider Foundation's Ocean Friendly Gardens (OFG) program is a national volunteer-run landscape education, hands-on training and advocacy program, providing valuable information to property owners, landscape professionals and government agencies on how landscapes and hardscapes can be modified to prevent water pollution. Follow the OFG criteria, and get a Yard Sign (see p. 31).

Surfrider Foundation chapters work with landscape professionals to incorporate the program's principles of C.P.R. into their business practices. Chapters also engage with local governments and water agencies to support OFG-oriented policy changes for existing and new development.

The OFG principles apply to every part of every watershed, from inland to the coast, mountains to the plains. Streets can be turned into "green streets" by techniques such as cutting curbs and redirecting runoff to be absorbed in planter strips. Even farms can be designed to be ocean friendly. Ocean friendly gardens also are on the front lines of climate change; their plants sequester carbon into soil from the atmosphere, healthy soil reduces flooding and eliminates water pollution, and green areas cool cities, and contribute to human health.

Laura Morton Design, Van Nuys



© Laura Morton, 2018

Conservation

Reducing water, energy and chemical inputs, while increasing wildlife habitat with native or climate-appropriate plants, protects waterways and oceans. Careful landscape design leads to less intense maintenance, reducing green waste and eliminating the need for equipment that contributes to air pollution.

Flower to the People, Inc., Culver City



© Alex Stevens, 2018

Permeability

Creating healthy, living soil and making flower spaces in hard surfaces to sponge up water and filter out pollution greatly improves the landscape's overall ability to hold on to more water in the plants' root zone, where it is needed most.

Gabrielle Harris, Los Angeles



© Gabrielle Harris, 2018

Retention

Holding rainwater in the landscape for the benefit of the plants and soil, buffering stream flow, and recharging groundwater mimics earth's natural processes. The soil sponge can retain up to 8x the amount of water in all above-ground reservoirs and storage. This is a significant resource in times of drought or flood.

Get your Ocean Friendly Garden **Yard Sign**

Conservation

Reduce outdoor water demand.

- PLANTS
 - Non-invasive
 - Climate-appropriate
 - Edibles qualify and don't have to be climate-appropriate
 - Grouped by water needs (Hydrozoned)
 - At least 10% are native species
- TURF GRASS AREAS
 - No "ornamental" turfgrass, OR kept to a minimum

AND

- Climate-appropriate (rainfall keeps it healthy)
- Maintained organically
- Consider inter-seeding turf areas with nitrogen-fixing plants such as clover
- IRRIGATION
 - Hand watered OR
 - High efficiency irrigation (drip, rotator sprinklers)
 - "Smart" automatic irrigation controller with rain shut-off device
 - Well maintained system

Permeability

Convert hard surfaces into sponges.

- HEALTHY, LIVING SOIL
 - A minimum of 2" - 4" of natural small size mulch. If fertilizing is needed, use compost, compost tea, humate, or worm castings and not commercial fertilizer
 - No use of pesticides, herbicides or fungicides
 - No landscape fabric (weed cloth)
- HARDSCAPE
 - Walkways and patios direct rainwater runoff to landscaping.
 - Make permeable by the use of pavers or permeable materials **OR**
 - create gaps and fill them in with gravel or plants
 - Bonus points for making driveways permeable too

Retention

Detain the rain that falls on your property.

- RE-DIRECT IT
 - Rainwater from the roof is directed into landscaping or a permeable area **OR**
 - Sent to rain tanks that overflow into permeable areas
- SOAK IT UP
 - Use simple contours such as bio-swales, dry creeks, basins, and depressions
 - Use of "dry wells" or concentrated infiltration pit if rainfall volume and lack of landscape space demands it (Construct only under the supervision of the appropriate landscape professional)
 - Move it around - slow, spread, sink in the garden

Dirt Diva Designs, Studio City



© Paul Herzog, 2018

Artemesia Landscape Architecture, La Jolla



© Jeremy Sison, PUA, 2018

Gabrielle Harris, West Los Angeles



© Pamela Beistler, 2018

Homeowner John Huber, Ventura



© Paul Herzog, 2018

Select Climate-appropriate plants



leathery



tiny



silvery



solar tracking

Rodriguez & Satterthwaite, Topanga Canyon

California native plants have evolved over time to thrive in our unique and varied climate conditions. By learning to recognize their adaptation tricks, you can identify climate-appropriate plants wherever you are. These four characteristics will allow you to find climate-appropriate plants in a crowded nursery.

Stiff, Leathery

These leaves hold on to water and stay evergreen for most of the year.

Silver or Hairy

Light colored leaves reflect sunlight, cooling the plant. Hairy back sides of leaves hold moisture longer, cooling them off.

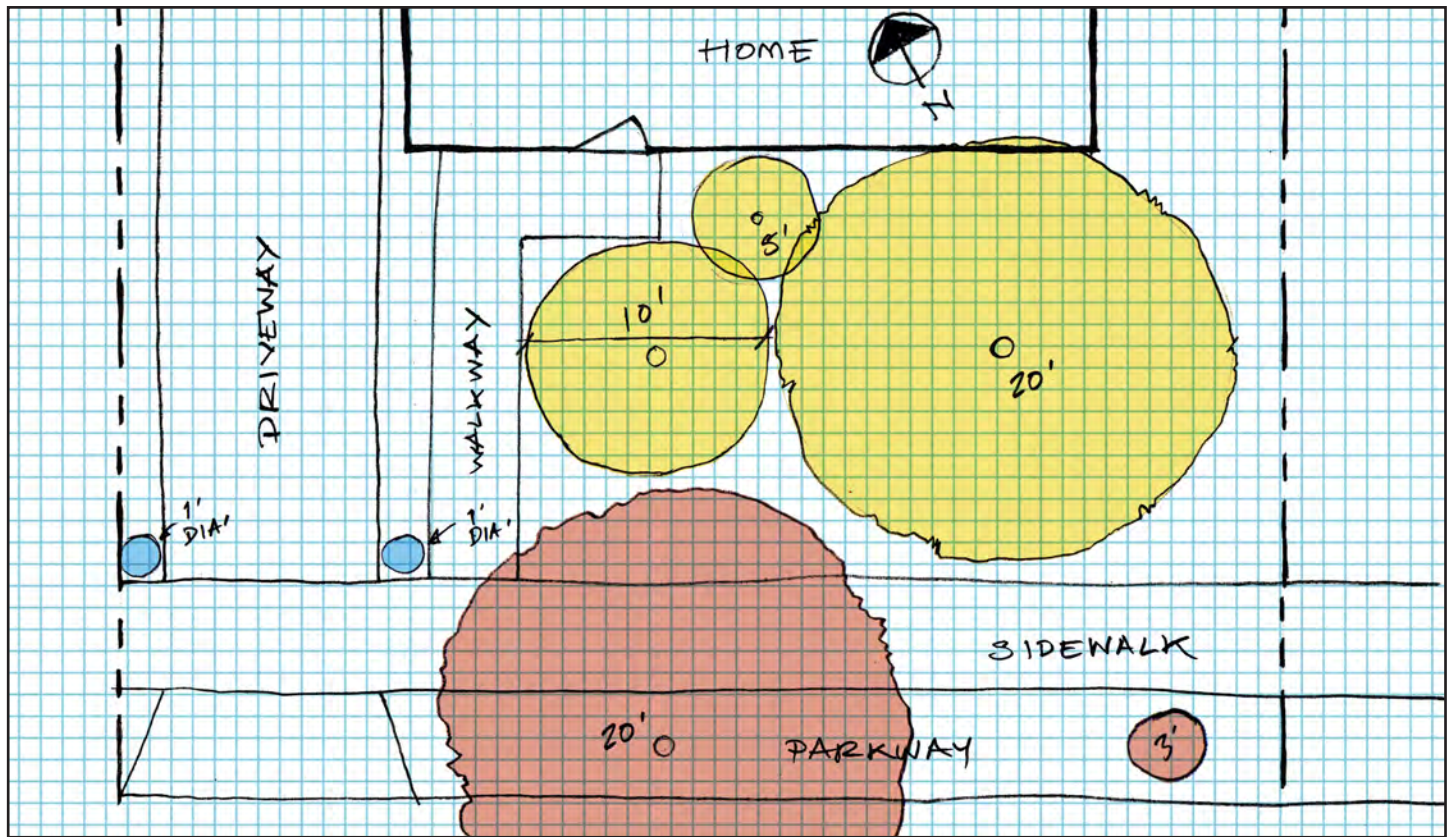
Tiny or Little

Small leaves are like tiny solar panels that are easier to keep cool than one large hot surface.

Solar Tracking

Leaves that appear to be standing at attention, straight up and down in the middle of the day, are solar tracking. As the day progresses, or if you see the same plant in the early morning, you will find that the leaves are more horizontally oriented. This plant is moving its solar panels to minimize the hottest sun exposure. California native manzanitas (*Arctostaphylos*) are notorious for this adaptation.

Plant in the Hydrozone



© G3, Alex Stevens, 2018

A Guide to Plant Water Needs
(see pp. 40-41):



Moderate



Low



Very Low

Group Plants by **Water Needs** (Hydrozone) and plan ahead for **Maturity**.

Proper plant placement, taking into account mature plant size, should limit the need for future pruning and reduce the amount of maintenance required in the long run. Natural forms are encouraged for habitat value, but fire prevention does require pruning and removal of dead, diseased, damaged and deranged plant material.

Scale Your Plants for Maturity

Make circles on your plan the size of the plant at maturity using a 1/4" = 1' scale (each box = 1').

Practice using colored paper to indicate the water needs of the plants. It will make it easier to lay out the planting plan in irrigation zones if you easily can move around the paper circles.

See on the plan how big the (VERY LOW water use) 20' wide canopy trees will be at maturity. Will this change the microclimates in the future? Think ahead if your new trees will cover a whole yard that's now sunny.

Play By The Hydrozone Rules

- Plants with similar cultural and water requirements should be planted together in order to irrigate them efficiently.
- Consider the soil, water needs, sun/shade and temperature requirements for each hydrozone.
- Each hydrozone should be watered by a separate irrigation valve.
- Do not mix plants with different water requirements in the same hydrozone (see p.40).
- Do not mix different irrigation types in the same hydrozone (see p. 36).
- The irrigation of each hydrozone should have matched precipitation (every nozzle needs to emit the same gallons per minute for spray or gallons per hour for drip).

Root depth matters

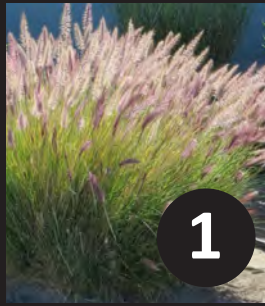
Make notes about the root depth of the plants when you are placing them on your plan. Trees, with their deep roots, will be irrigated less frequently, but for a longer time. Groundcovers with shallower roots will require more frequent watering. **Keep trees and groundcovers on separate hydrozones.**

Small plants are mighty

Once planted in a properly prepared bed, and watered wisely, small plants establish themselves more vigorously than plants raised in larger containers. But just because you've selected small plants, doesn't mean you need to buy more than the space allows when those plants reach maturity!

Don't plant a Pest

Remove These Invasive Plant Pests



1

1 *Pennisetum setaceum*
African Fountain Grass



2

2 *Vinca major*
Periwinkle



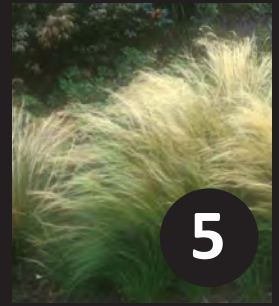
3

3 *Schinus terebinthifolius*
Brazilian Pepper Tree



4

4 *Cytisus scoparius*
Scotch Broom



5

5 *Nassella tenuissima*
Mexican Feather Grass

Some exotic plants are so ubiquitous in California, that many people think they are natives. These interlopers love it so much that they have moved in, stretched out, and are attempting to take over. Some are greedy, jumping up at the first rainfall and sucking water away from the more relaxed native plants. Others

are pushy, taking over habitat and keeping everyone else out. Few of these species offer any benefits to the local animals and insects. Invasive species and species that act like invasives should be removed from your gardens, removed from nursery stock and should not be planted in the first place.

Try These Well Behaved Plants Instead



1

1 *Melica californica*
CA Melic Grass



2

2 *Corethrogyne filaginifolia*
Silver Carpet



3

3 *Quercus agrifolia*
Coast Live Oak



4

4 *Lotus scoparius*
Deerweed



5

5 *Nassella pulchra*
Purple Needle Grass



PlantRight www.plantright.org

Since 2005, PlantRight has been working with California's nursery industry to stop the sale of horticultural invasive plants in ways that are good for business and the environment. PlantRight unites leaders from California's nursery and landscape industries, conservation groups, academia, and government agencies in a voluntary, science-based, and collaborative way. PlantRight's Plant List, identifying the highest priority invasive garden plants, is the cornerstone of the program. For each plant on the invasive plant list, PlantRight suggests several non-invasive alternatives. Retailer partners pledge not to sell any plants on the Plant List, and any plants added to the list in the future. To track its progress and inform the plant list, PlantRight conducts a survey of retail nurseries throughout the state. PlantRight also has a Continuing Education program available for free to anyone who wants to learn about horticultural invasive plants.



California Native Plant Society (CNPS) www.cnps.org www.calscape.org

Our gardens play an important role in local ecosystems. The plants we choose for our gardens have the power to support pollinators, build wildlife corridors, and restore our natural landscapes. Calscape.org, is a tool CNPS has developed that makes it easier for gardeners to create thriving, natural gardens and avoid invasive plants. Use it to discover which plants are native to your location and to search by water requirements, blooming season, pollinator habitat and more. You also can build custom plant lists and find nearby nurseries who carry the plants you want. In addition to online resources, CNPS has 35 local chapters statewide that host native plant sales, garden tours, field trips, and expert talks.

Do Plant with **Confidence**

Get ready to **Install** plants!

Follow these simple steps to achieve healthier roots and stronger overall plant growth. It will take a contractor longer to plant this way, so expect a higher installation cost. However, the outcome is less plant shock and better, faster establishment of vigorous plants.

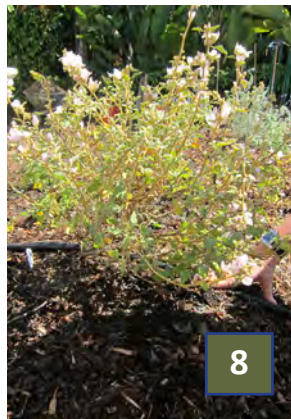
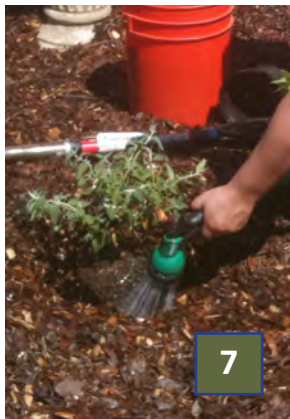
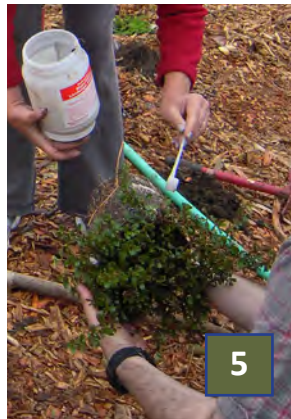
You Will Need:

- Tools: shovel, hand trowel, buckets, hose with shut-off
- Plants
- Compost
- Mulch

Add These For More Advanced Planting:

- Mycorrhizae (not for grasses)
- Fish Emulsion or Water Soluble Humates

All photos this page: © Paul Herzog, 2018



What's with all the **Water**?

Drainage. If the water does not drain within an hour or so, it's probably not a good place to plant a climate-appropriate plant until you fix the soil compaction (*see p. 21*).

Kickstart OWL. By watering so thoroughly, you are getting soil organisms that might be in the surrounding soil ready to "wake up" and start cycling nutrients for the plant.

Plant Shock. The major reason plants suffer from planting shock is that the dry soil around the new plants wicks water away from their rootball, sending plants into shock from which they never recover. By watering the surrounding soil, you reduce the probability of plant shock.

Successful Planting In Ten Easy Steps

1. **Dig A Hole!** Don't dig it any deeper than the rootball of the plant. Do dig at least a little bit wider than the plant to loosen the surrounding soil. If you accidentally dig too deep, be sure to put the soil back in and tamp it down firmly before moving on, to give your plant a solid base.

2. **Throw In Some Compost** or worm castings no more than 1" deep - along the bottom of the hole. Never put mulch in a hole! **And don't bother with fertilizers either.**

3. **Fill The Hole With Water TWICE**, and allow it to drain completely each time. This will take a long time, unless your soil is really sandy. Start digging the next hole, or take a break.

4. **Submerge The Rootball** in a bucket of water until air bubbles stop bubbling up. Keep the plant in its container, or you can take it out - just be careful with the delicate roots.

5. **Add Fish Emulsion** or soluble humate to the water (follow label directions). Dust the rootball with a mycorrhizae inoculant (only if the plants are woody, so don't bother with the grasses).

6 **Place Plant In Hole**, make sure the root collar (that's where the roots join the stem or trunk) is a bit (1/2" - 1") higher than the surrounding soil/ existing grade. This is super important because we don't want the plant to get choked by the surrounding soil.

7. **Backfill The Hole With Water** one more time (this time with the plant in it) and let it drain completely.

8. **Now Fill The Hole With The Soil** you dug out (not with fancy potting soil!), making sure the soil slopes away from the root collar. Tamp the soil down (use your feet, but be gentle) so the plant doesn't move around.

9. **Don't Create A Bowl** around the plant. Really! Your plant doesn't need it and it might make a moat that would drown your climate-appropriate plant.

10. **Water The Soil All Around The Plant** one more time, and deeply. And have a drink of water yourself!

Go with the **Low Flow**: Spray or Drip?



Image courtesy of Rain Bird Corporation

Spray Irrigation emits water in an overlapping (head-to-head) pattern.

This can be an efficient way to irrigate large landscapes with groundcover or uniform plant material like lawns or meadows.

When properly installed, low volume spray heads apply water at about 1/3 the rate of conventional spray heads. The newer spray irrigation heads are improved so that they spray heavier water droplets that are more resistant to wind. Landscapes with grade changes using spray heads should have check valves installed to prevent water from flowing out of the heads at the lowest point in your landscape.

Gallons Per Minute (GPM) Spray systems apply water in GPM. If you know the application rate of each spray head, the distance between heads, and the pressure of your system, it is relatively easy to figure out how much water is applied every time you run your irrigation.

Challenges include irrigating very narrow areas surrounded by hardscape, or irregular patterns. Irregular patterns are particularly challenging because spray irrigation requires head-to-head coverage to be efficient and odd-shaped areas may be under- or overwatered. Replace high-volume spray heads that emit water at a much higher rate than the soil can absorb with low-flow heads, and remember to cycle and soak if you experience runoff (*see p. 39*).



Image courtesy of Rain Bird Corporation

Drip Irrigation delivers water directly to roots.

Since drip irrigation is covered with soil or mulch, water does not evaporate as quickly as it might if it were applied at the surface by spray.

Installations of subsurface (or under at least 2 inches of mulch) systems may be the most efficient way to irrigate nearly every type of garden area. Since the tubing is flexible, it can be made to accommodate a wide variety of irregularly shaped areas or rectangular areas when laid in a grid pattern.

Gallons Per Hour (GPH) Drip systems apply water in GPH. They need to run for longer periods of time than spray systems. However, the actual run time must always account for how fast water is applied (precipitation rate) and eliminating runoff.

Challenges include the possibility that drip systems could apply water too quickly for the soil to absorb, so careful consideration is required especially when dripline grids are installed (*see p. 37*). Drip irrigation operates most efficiently at low pressure (between 15 and 30 psi). Optimal performance requires the use of pressure regulation and a filtering system to keep the emitters from becoming clogged. Most low flow valves have pressure reduction and filtration included, so replace all valves that are not specified for low flow systems.

What is a Tattle-Tale?

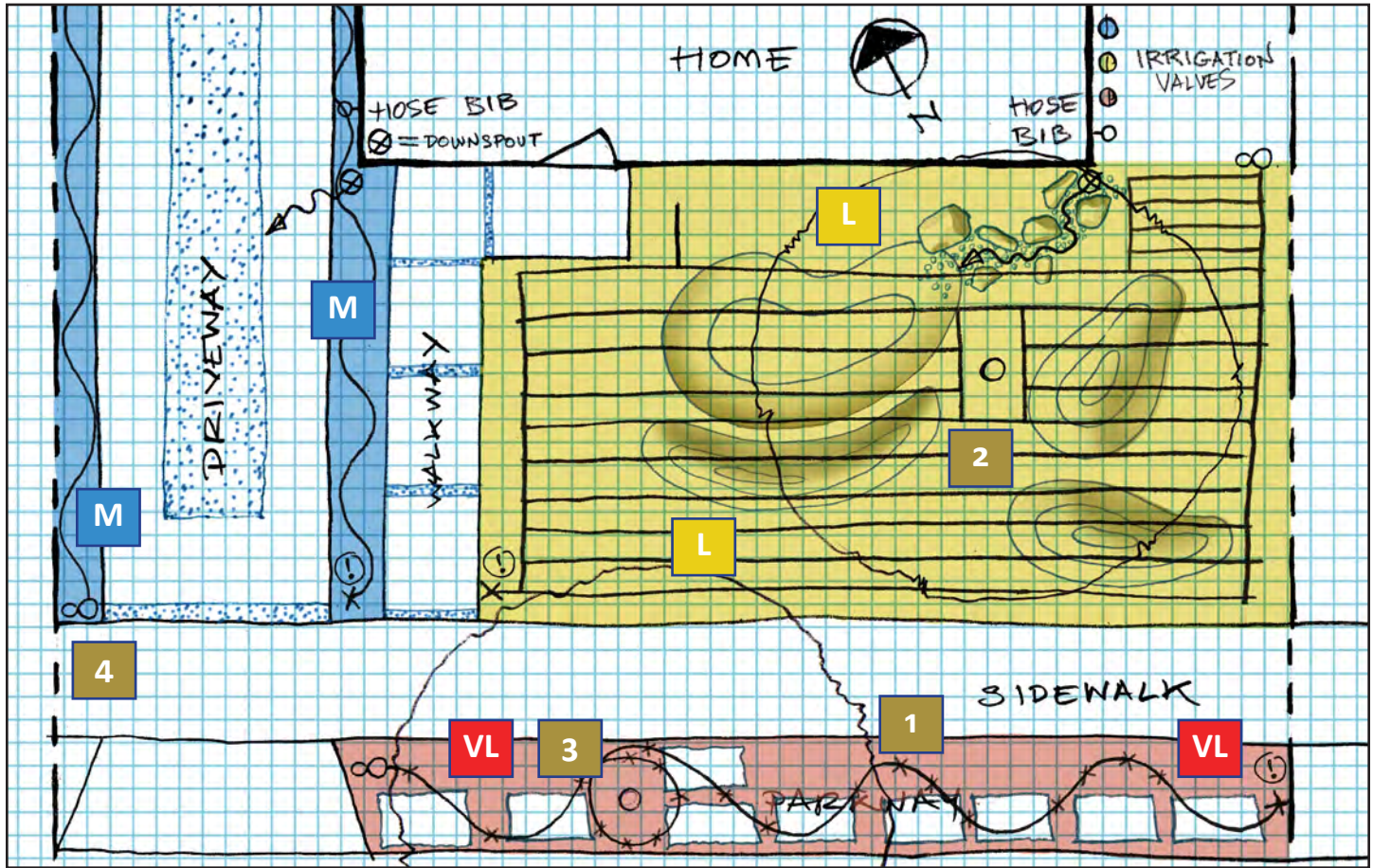
Screw a white cap (replacing the nozzle) on to the pop-up riser of one sprinkler head on each line when converting to drip.

When the drip irrigation is running below the mulch, the tattle-tale will pop up and let you know that the irrigation is on.

What is a Low Flow Valve?

Irrigation valves are designed to work within a certain pressure range (pounds per square inch or psi) and flow range (gallons per minute or GPM). If you redesign your system and use low flow irrigation, the flow through the valve may be so low that your existing valve will not operate effectively and may get stuck in the "open" position, wasting water. If you have flow lower than 5 GPM per valve, check your valve specifications for flow range to determine whether or not to replace your valves.

Match Irrigation to new Hydrozones



© G3, Alex Stevens, 2018

Adjust Valve Zones to Hydrozones.






Which sprinkler heads go on at the same time and what kind of plant material are they irrigating? Get ready to make changes to your irrigation system in order to accommodate both the new grading and the new plants you are introducing into your garden. In our example garden, we have three different hydrozones:

M **MODERATE** water use plants in the strips along the driveway will have a **in-line drip irrigation in a random pattern** around each plant.

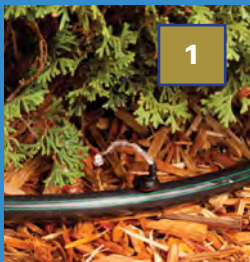
L **LOW** water use plants in front yard dry creek and berm areas will have an **in-line drip irrigation line in a grid pattern**; the grid pattern is better for situations where you want to achieve a more uniform wetting pattern that works especially well with groundcovers and high-density mixed planting.

VL **VERY LOW** water use plants in the parkway will have an **on-line or "point source" drip irrigation line in a random pattern** around each plant; note that trees get special attention with an extra ring to accommodate their expected growth.

pattern around each plant; note that trees get special attention with an extra ring to accommodate their expected growth.

-  **END FIGURE "8" FLUSH VALVE**
-  **TATTLE TALE**
-  **ONLINE DRIP LINE**
-  **INLINE DRIP LINE**
-  **MULCH OR GRAVEL**

Images provided courtesy of Rain Bird Corporation



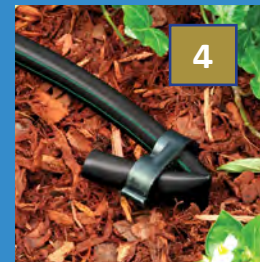
On-line drip emitter inserted into blank tubing



In-line drip grid emitters are built into tubing



Tree drip ring needs to expand as tree grows



Dripline end figure 8 can double as a flush-out valve



Manage water for OWL

© Laura Morton, 2018

Laura Morton Design, Van Nuys

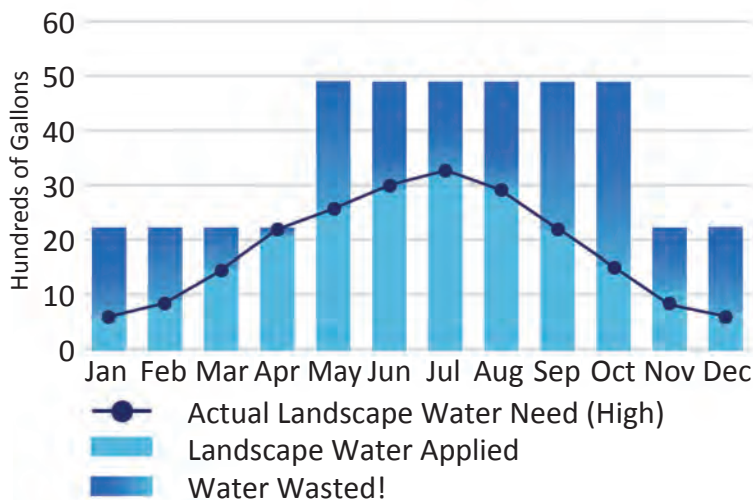
Balance your soil Moisture account.

The objective of managing water wisely in the landscape is to keep just the right balance of oxygen and water so that plants look great, stay healthy, and the soil microbes are kept awake cycling nutrients. When oxygen and water are in balance within the soil, the amount of water that is lost through evapotranspiration (ET) is just like writing a check for water out of the soil bank account (*see p. 40*).

Rain and irrigation deposit water into the soil checking account. The trick is to make sure not to apply more water than is needed in dry months, and to hold on to rainwater in the wet months. Most people apply more irrigation water than their landscape really needs. The amount of wasted water can be greatly reduced by closely managing/adjusting the landscape water applied through irrigation

How do we tell when the account is depleted? Smart irrigation controllers and landscape professionals are able to calculate this OR you can rely on using a soil moisture probe or even probing with your fingers.

700 SF Landscape Water Not Well Managed



Wet or Dry?

Use “digital” technology! Soil may appear dry on the surface, stick your finger into the soil and make sure it’s wet below. If it’s wet up to your second knuckle, it doesn’t need any more water, so wait

another day or two. Alternatively, if you use a soil probe, you can feel the moisture in the soil and make a determination yourself (*see p. 20*). You can look at plant health to determine water need, but sometimes overwatering and underwatering will produce similar symptoms in plants.

Underwatering Symptoms

- Soil is bone dry
- Older leaves turn yellow or brown or drop
- Leaves are wilted
- Leaves curl and become brittle
- Stunted growth
- Plant is dead!

Overwatering Symptoms

- Soil is constantly saturated
- Leaves turn a lighter shade of green or turn yellow
- Young shoots are wilted
- Leaves are green yet brittle
- Algae and mushrooms are present
- Growth is excessive or stunted
- Plant is dead!

Plan for Zero Runoff

Keep Water in the root zone.

Observe the irrigation while running and check to make sure that no water is spraying or flowing onto sidewalks, patios or structures. If the water is being applied too fast for the soil to absorb, runoff will occur. Puddling and pooling also may be an indication that water is applied too fast or too often. Repairs to broken pipes and heads should be made immediately, or the system should be turned off until repairs can be made. The optimal time to water is in the late evening and very early morning. Check with your local water agency for any watering restrictions.



Install a “Smart” Irrigation Controller that automatically adjusts irrigation schedules in response to changing site and/or weather conditions; most of these interface with mobile devices and computers, so you can change the programs in your pajamas. ET (Evapotranspiration) controllers monitor weather conditions and Soil Moisture Sensors directly sample moisture in the soil profile. When selecting a controller, look for brands with the EPA WaterSense® label.

Cycle and Soak Programming eliminates water runoff. Observe how quickly runoff occurs when you are running your irrigation. This is the MAXIMUM run time for your irrigation controller in this hydrozone. So, to cycle and soak your irrigation, you divide up the total minutes required by the hydrozone into blocks of time no longer than the observed runoff time and allow a 30 minute rest period in between the irrigation cycles. Make sure that the spray irrigation is never running for longer than 8 minutes at one time. **For**

example, if we need 12 minutes of water in a certain hydrozone, but we observe runoff after 4 minutes, break down the 12 minute total into three 4 minute cycles with 30 minutes between each cycle.

Hand Watering is especially good for getting a garden established when you are going to want to spend more time looking at the plants to make sure nothing is amiss. During establishment you may need to water more frequently because roots are only 4” - 10” deep on a newly-planted one gallon plant. (That’s why it’s great to try to plant during the rainy season!) Be sure to use a hose shutoff so that you are not inadvertently wasting and spraying water into the street. Ask your designer or landscaper to get you a hose shutoff, if you don’t yet have one.

Really look at your plants. Are they appearing droopy or sad? Is the soil very dry? If so, then give the plants a good drink and watch. Don’t water more than two days in a row, and let the soil partially dry out before watering again. Remember the symptoms of overwatering and underwatering are very similar (*see p. 38*).

After the first year or two, once your plants are settled, your watershed wise garden should not need water more than once or twice a month, if at all. If you are at the coast, you may be able to eliminate regular irrigation all together after establishment.



hose shutoff

Pressure Regulation either for the whole house, or at each irrigation valve for each zone, eliminates excess pressure, and allows the irrigation system to run more efficiently. If you are keeping a spray system, pressure regulation will reduce misting and evaporative loss. With drip systems, pressure regulation is essential, because drip lines operate best at very low pressure.

What Is Irrigation Efficiency (IE)?

Irrigation Efficiency describes how well your irrigation system is delivering water to the plants you are intending to irrigate. Since no mechanical system could be 100% efficient, the IE of any particular irrigation system will always be less than 100%. A well maintained spray system may achieve 70% IE, while a drip system could be as high as 90% IE.

Since there are many inter-connected mechanical parts of a system, there are lots of ways your irrigation can become inefficient and begin applying water in places that are not beneficial to your landscape. IE depends upon four key elements:

- 1 Design of your system reflects the best components for the specific conditions of your site.
- 2 Installation of the system uniformly distributes the water to the plants in the landscape.
- 3 Management of the system correctly balances the soil moisture account.
- 4 Maintenance adjustments and repairs are made frequently.

Tips for Eliminating Runoff

Several things can be done to minimize runoff due to irrigation. These include:

- 1 Convert planter area spray systems to drip irrigation with the lower precipitation rates, pressure regulation and a filter.
- 2 Tune up spray irrigation systems so there is no overspray on to hard surfaces.
- 3 Do not install spray irrigation in areas that are too narrow for spray (8’ wide or narrower).
- 4 Move spray heads 24 inches from any buildings or hard and impermeable surfaces.
- 5 Cycle and Soak irrigation run times.
- 6 In lawn areas, be sure to follow the organic maintenance practices to keep your soil spongy (*see p. 42*).

How much **Water** does your garden **Need**?

Evapotranspiration (ET) is the key to watering plants.

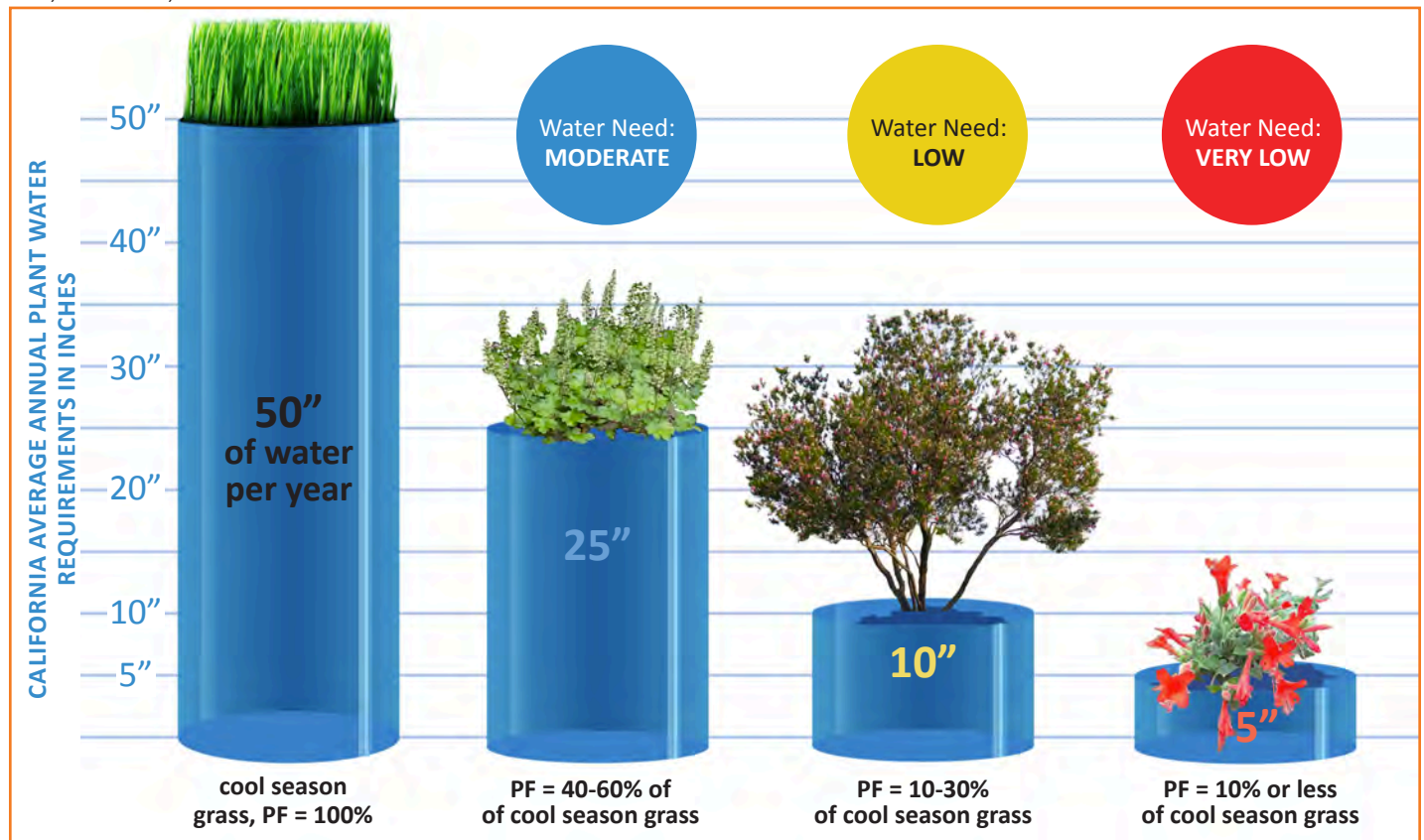
Evapotranspiration (ET) can be thought of as “reverse rain.” ET measures the inches of water being transferred over some period of time from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration (sweat) from plants. ET is a quick way to explain environmental and climate conditions, especially solar radiation (sunshine or cloud cover). Many plants need more water in the summer, when the sun is high and days are long; winter days are shorter and often rainy or overcast, so many plants need less water.

ET therefore, explains how much water plants really need and when they need it; critical information for planning irrigation and managing the **Soil Moisture Account** (see p. 38).

Plant Factor (PF) describes the specific water need of each plant in your landscape. PF can be determined by gathering information about a plant and then comparing it to the amount of water needed by cool season grass growing in your climate zone. PF is expressed as a percentage of the water needed by cool season grass. Plant watering needs, include: **VERY LOW at 10%**, **LOW at 20%**, **MODERATE at 50%** and **HIGH at 100%** (cool season grass).

Landscape Water Need takes into consideration the effects of irrigation efficiency (IE Percentage) and square feet of landscaped area (SF) to figure out how many gallons of water a particular landscape would require, given its climate zone (ET Inches) and plant selection (PF Percentage).

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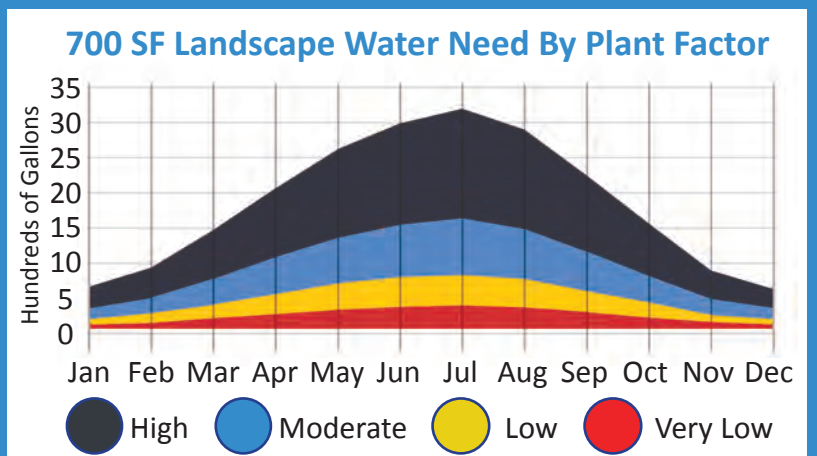


Reduce Landscape Water Need: Understand ET, PF and IE

Every plant choice gives us the opportunity to reduce the Landscape Water Need.

In our 700 SF Front Yard, replacing **HIGH Plant Factor** cool season grass with **VERY LOW Plant Factor**, climate-appropriate plants saves almost 28,000 gallons of water annually, without changing irrigation efficiency (see p. 41).

Converting to drip irrigation with a higher IE saves even more (up to 20%)!



How much **Water** can your new garden **Save?**

Calculate your landscape watering need in Gallons.

Our Front Yard Landscape Water Need:

Our front yard is 700 Square Feet (Landscape SF). In order to calculate the Landscape Water Need, we will keep climate zone (ET Inches) and irrigation efficiency (IE Percentage) constant, but

change the plant selections (PF Percentage).

See how much water could be saved every year by switching from cool season grass and replacing the area with climate-appropriate **MODERATE**, **LOW**, or **VERY LOW** water requirement plants.

Landscape SF = 700 Annual ET Inches = 50" Irrigation Efficiency % = 70%
Landscape SF x ET Inches x Plant Factor % ÷ Irrigation Efficiency % x 0.62 = Landscape Water Need in Gallons

Grass Water Need: HIGH

HIGH Water Need Plant Factor = 100% = 1.0

$700 \text{ SF} \times 50" \times 1.0 \div 0.70 \times 0.62 = 31,000 \text{ Gallons Annually}$

New Front Yard Water Need: MODERATE

MODERATE Water Need Plant Factor = 50% = 0.50

$700 \text{ SF} \times 50" \times 0.50 \div 0.70 \times 0.62 = 15,500 \text{ Gallons Annually}$

In our 700 SF Front Yard, replacing cool season grass with **MODERATE** climate-appropriate plants saves 15,500 gallons of water annually, without changing irrigation efficiency.

Gabrielle Harris, Los Angeles



Flower to the People, Inc., Los Angeles



LOW Water Need Plant Factor = 20% = 0.20

$700 \text{ SF} \times 50" \times 0.20 \div 0.70 \times 0.62 = 6,200 \text{ Gallons Annually}$

Replacing cool season grass with **LOW** Water Need plants saves 24,800 gallons of water annually, without changing irrigation. Change irrigation to drip with IE= 90% and save 26,178 gallons annually.

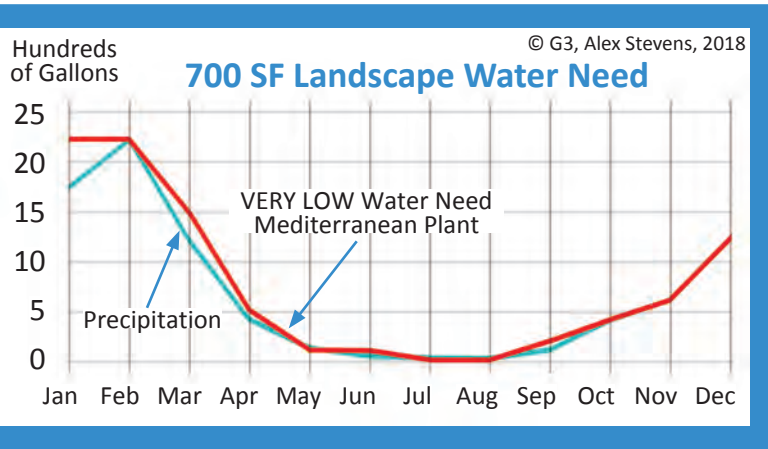
VERY LOW Water Need Plant Factor = 10% = 0.10

$700 \text{ SF} \times 50" \times 0.10 \div 0.70 \times 0.62 = 3,100 \text{ Gallons Annually}$

Replacing cool season grass with **VERY LOW** Water Need plants saves 27,900 gallons of water annually, without changing irrigation. Change irrigation to drip with IE= 90% and save 28,589 gallons annually.

Sleep in summer, Grow in winter: Mediterranean climate-appropriate plants

Since many climate-appropriate plants from Mediterranean climates have **MODERATE**, **LOW** or **VERY LOW** water needs, planting them saves water when compared to cool season grass. However, most of these plants don't want water in the summertime when they are dormant; they want water in the winter, when they can grow their roots in cool soil using rainwater. Irrigation needs can be reduced by directing rainwater to the garden from the roof and other surfaces in the winter months. But beware the dry winter -- these plants will need supplemental irrigation in winter if they are to survive the following summer.



Steward your land

© Mayra Dinos, 2018



Mayra Dinos Landscape Design, Topanga Canyon

Congratulations! Your beautiful new garden is now installed. Your garden is alive (more alive now than ever) and it will need some tending to thrive. A newly planted garden requires some extra time and special attention to bring it to its full potential. Consider keeping your designer involved while the garden is in its establishment to keep things on track.

Add Organics. As mulch breaks down, add more! The easiest way to do this is to use falling leaves from your trees. A leaf-covered garden is a healthy garden! You can brush them off patios, walkways and stairs right onto the existing mulch. No falling leaves? You can get more mulch from your local composting facility, or order it from a local nursery or building supply yard. Remember to “chop it and drop it” when pruning.

Weed. You are going to have to weed, especially after the winter rains, and especially in the first year or two. Even with a thick layer of mulch, you may still have some weeds popping up. Be sure to eliminate them regularly, and then feed your soil some compost to improve the root systems of the plants. Consider cutting weeds down to the soil level rather than pulling out roots and disturbing the soil.

Water. Especially during the winters of the first two years after planting, you need to give your plants a little extra water. Not too much! Remember, these plants (and your soil) will be healthier, live longer, and grow stronger if you give them just enough water.

Prune. Get a good pair of hand clippers, gently prune trees, perennials, and grasses as needed. Mow your natural lawn annually after it has self-seeded to keep it clean and walkable. Don't mow it too short - look up the grasses and/or sedges that you used and follow growers' directions.

Maintain For Rain. Check downspout connections and overflows annually to make sure they're working properly. If you don't have gutters and downspouts, make sure there are no areas of erosion around your house. Consider adding a rain chain and small bit of gutter if you need to direct water away from a highly eroded area. Loosen your soil if it's become compacted. Remove and relocate extra soil or silt that's built up, and add mulch if needed.

Harvest. Fruits, vegetables, seeds and flowers - it's up to you to pick them when they're ready, before the birds and other creatures get them. If you have stiff competition in your neighborhood, invest in some bird netting or lightweight mesh bags and wrap your trees, vines, shrubs or the fruit itself a week or two before it's ready to harvest. Be sure to clean up and compost fallen fruit to limit pests.

Integrated Pest Management (IPM). A few aphids or caterpillars will feed the birds, but a massive infestation requires immediate action on your part. Remove diseased plant material and don't put it in your compost pile. Wash off unwanted insects with your hose. If they come back try spraying them with a mixture of mild dish soap and water, or with compost tea. Spread worm castings and mulch.

Go Out and Have Fun! By spending time relaxing and playing in your garden you will be more aware of how it's growing, how it changes, and what it needs.

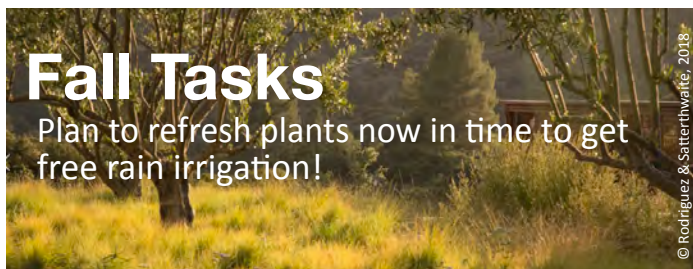


Maintain Lawn Organically

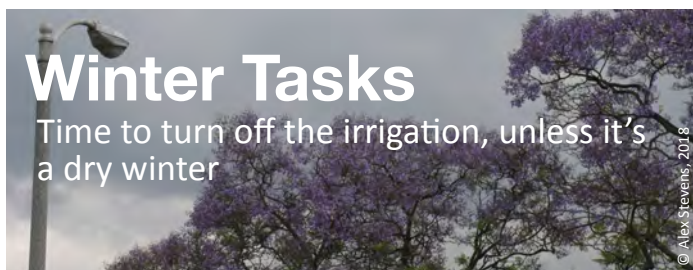
If you decide to keep your grass, follow these guidelines to maintain it organically so that it will play nicely with the rest of your watershed wise landscape.

- Aerate and de-thatch annually
- Topdress with 1/8" - 1/4" good compost annually
- Manage your irrigation
- Mow less frequently
- Maintain 3" - 4" height on cool season grass and 1-1/2" to 2" height on warm season grass
- Grass-cycle every time you mow or use a mulching mower
- Do not allow seed heads to form on the grass (remove if they do)
- Consider over-seeding with clover to turn it into a "Natural Lawn"
- Eliminate chemical inputs

Use this Maintenance Checklist

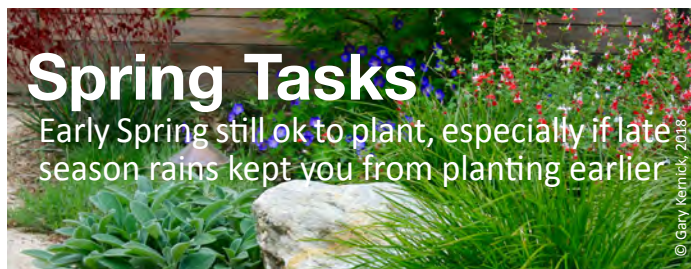


- General Landscape Management
 - Review plant health and investigate reasons for observed decline
 - Weed and deadhead flowers as needed
 - Stake trees: add new or make adjustments
- Maintain Rainwater Capture Systems
 - Make sure gutters and downspouts are not clogged
 - Clean rainbarrels/cisterns and clean out catch basins
 - Drill holes in bottoms of catch basins, if standing water
 - Make sure mosquito screens are not ripped or loose
 - Flush pipes
 - Remove debris from swales, especially at inlets/outlets
 - Refurbish berms and basins as needed
- Add Compost or Worm Castings
 - De-compact or aerate lawns and areas around trees/ large shrubs and add worm castings/compost
- Replenish Mulch
 - Maintain 2" if established garden, 4" - 6" if still getting established
- Late Fall Pruning (Chop and Drop)
 - Cut back grasses (once a year for deciduous, less often for evergreen)
 - Cut back young salvias (sages) by 1/3
 - Cut back perennials and pinch back non-woody shrubs and perennials
- Irrigation Checkup
 - Turn on each valve to check for problems and make repairs
 - Open manual flush valves and flush
 - Clean irrigation filters
 - Adjust controller - reduce time



- General Landscape Management
 - Review plant health and investigate reasons for observed decline
 - Weed and deadhead flowers as needed
 - Stake trees: add new or make adjustments

- Pruning (Chop and Drop)
 - Prune dead, diseased, damaged, and deranged branches of trees and large shrubs
 - Cut back perennials and pinch back non-woody shrubs and perennials
- Still Time to Plant (but not in wet soil!)
- Irrigation Checkup
 - Turn on each valve to check for problems and make repairs
 - Manually run irrigation if the weather has been very dry



- General Landscape Management
 - Review plant health and investigate reasons for observed decline
 - Weed and deadhead flowers as needed
- Replenish Mulch
 - Maintain 2" if established garden, 4" - 6" if still getting established
- Irrigation Checkup
 - Turn on each valve to check for problems and make repairs
 - Open flush valves and flush
 - Clean irrigation filters
 - Seasonally adjust automatic irrigation schedule
 - Move drip irrigation and add emitters as the tree grows in order to maintain the wetting zone at the outside edge of the tree's canopy (dripline)



- General Landscape Management
 - Review plant health and investigate reasons for observed decline
 - Weed and deadhead flowers as needed
- Irrigation Checkup
 - Turn on each valve to check for problems and make repairs
 - Return irrigation controller to summer program



in memoriam Paul Herzog

This book is dedicated to Paul Herzog, Surfrider Foundation’s National Ocean Friendly Gardens Program Coordinator from its inception in 2009 until his untimely death in 2017. Paul was devoted to sharing his boundless energy and enthusiasm for watershed wise gardens with everyone he encountered. He approached his work with heart and a type of authenticity that drew others to him.

As a board member of the California Urban Water Conservation Council (CUWCC, reorganized as CalWEP, the California Water Efficiency Partnership), Paul was a strong voice for a completely integrated water conservation approach that put capturing rainwater and restoring soil first. He actively participated in what is now CalWEP’s Landscape Transformation Initiative, contributing his expertise to the big vision while offering essential details. Paul believed that gardens that functioned as healthy mini-watersheds were the future of our urban/suburban landscapes. And he successfully encouraged his colleagues to focus their water conservation efforts on creating incentives for the kinds of gardens that would enhance water supplies, protect water quality, regenerate healthy living soils, provide habitat for California’s native fauna, and remain beautiful and resilient despite changing climactic conditions.

With the Association of Professional Landscape Designers California Chapter (APLD-CA), Paul crystalized a new vision of landscape professionals as stewards and grass-roots advocates for a new paradigm in California landscapes. This seed took root, sparking a key shift in APLD-CA member engagement and activism. Paul caucused with landscape professionals, and contributed his valuable time as a subject-matter expert during regulatory reviews, legislative sessions and meetings from Sacramento to San Diego. His significant efforts established a foundational understanding among APLD-CA members that the adoption of Ocean Friendly and watershed wise garden practices is essential to ensure a prosperous future for landscape professionals. This growing movement embraces the concept of landscapes as functional, living soil sponges—developed by a large, collaborative, and knowledgeable workforce of landscape stewards.

Through Surfrider Foundation, Paul developed and implemented an audacious garden-making program—Ocean Friendly Gardens—to empower property owners throughout the watershed to reclaim their natural world by taking direct action in their own front yards to protect the ocean, waves and beaches. Paul dutifully applied his boundless intellect, curiosity, and knowledge to policy development and grass-roots organizing for lasting change, but the truth is that Paul was never happier than when he was in community with his Surfrider colleagues and others, building Ocean Friendly gardens, sharing laughter, knowledge, and good food.

Surfrider Foundation, CalWEP, and APLD-CA have lost a dear friend and strategic partner whose memory continues to inspire us to spread the word about the watershed approach to landscaping. There is no doubt that Paul helped kickstart and foster a movement to redefine our collective understanding of what makes a garden truly beautiful, and for that we are truly grateful. Thousands of people, in landscapes across the U.S., have been inspired by his message, and the people of California derived the greatest benefits.

We know this book would make Paul Herzog smile.

Surfrider Ventura Ocean Friendly Garden



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Paul Herzog SF HQ Memorial Garden, San Clemente



Surfrider San Diego Ocean Friendly Garden



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Ecological Landscape Design, Davis



Laura Morton Design, Pacific Palisades



Stephanie Bartron Landscape Design, Encino



West LA Surfrider OFG & APLD Greater LA, West Los Angeles



The **Watershed Approach** to landscaping unifies landscape professionals, watershed protectors, water suppliers, planners, suppliers and developers with principles to solve the most pressing climate issues of our time. **APLD-CA** stands in support of California initiatives including:

- outdoor water/energy demand reduction (conservation)
- water quality improvement and healthy water bodies for fish and fowl
- carbon sequestration and the “healthy soils” initiative
- wildlife and insect habitat protection and regeneration
- urban greening and cooling
- climate-smart regenerative agriculture
- permaculture and re-wilding (bring back the beavers!)

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