Welcome to Wimberley!

This collection of documents provides a framework for sustainable living and building within The Wimberley Valley, where conservation of natural resources and the implementation of "water-smart" practices are essential to protecting the local environment and our way of life. Water is our most precious natural resource. Without it, there is no life. And because outdoor water use can stress our already scarce water supply, the City of Wimberley encourages new and current residents to reduce this demand through thoughtful landscape design and efficient use of water throughout the home. By adopting these practices, residents and businesses can lower their utility bills, increase property values, preserve vital habitats for local wildlife, and preserve our drinking water supply.

Please review the attached documents:

1. Water-Smart Landscapes by the Environmental Protection Agency.
2. Deer Resistant Design from Water Wise Austin and partners.
3. Water Wise Graphic from the Texas Commission on Environmental Quality.
4. Water Use for Businesses Graphic from the Texas Water Development Board.

For additional resources and information please visit watershedassociation.org.

Rainwater Harvesting Incentives

The City of Wimberley is proud to offer rainwater harvesting incentives for those choosing to install rainwater collection systems that are a component and integrated part of the water sourcing for the primary structure on the property.

- For all single-family new construction and remodel construction, where a rainfall collection system is being installed, the fee for the issuance of the building permit shall be waived.
- For all new commercial construction and commercial remodel construction, where a rainfall collection system is being installed, the fee for the issuance of the building permit shall be waived up to an amount not to exceed $1,500.00.
- The waiver of fees shall only apply to the building permit fee. This waiver shall not apply to any plan review, inspection, or site development fees.

For more information contact the Development Services Department at permits@cityofwimberley.com.

Water-Smart Landscapes

Start With WaterSense®

Cover photographs from Gino Piscelli, Mississauga, Ontario; Joy Stewart, Bristol, Tennessee; Linda Andrews, Olympia, Washington; and John Galbraith, Grants Pass, Oregon

Overview

Having a beautiful yard doesn't have to mean using a lot of water or spending a lot of money.

The U.S. Environmental Protection Agency's (EPA's) WaterSense program can help you take some of the guesswork out of keeping a healthy yard while using less water.

Outdoor water use stresses existing water supplies by contributing to peak demand during summer months. During these hot, dry times, utilities must increase capacity to meet water needs, sometimes as much as three to four times the amount used during the winter.

This brochure provides a holistic approach to developing a water-smart landscape for your home or property. From thoughts on landscape design to daily maintenance, it includes a step-by-step process for any homeowner and examples of beautiful, water-saving landscapes from across the country.

WaterSense and this brochure make it easy to find products and information to ensure you have a water-smart landscape that you can be proud of—for both its natural beauty and its low impact on the environment.

WATERSENSE'S KEY STEPS FOR SAVING WATER OUTSIDE

- **Timing is everything.** Know how much water your landscape actually needs before you set your sprinkler. Your local water utility can offer recommendations and best times to water.
- **Look for the label.** WaterSense labeled irrigation controllers use local weather or soil moisture data to water only when needed. If your system uses a clock-based controller, consider upgrading to this smart technology. WaterSense laebeled spray sprinkler bodies with integral pressure regulation can reduce water waste by providing a constant flow at the sprinkler nozzle.
- **Go with a pro.** Contractors certified through a WaterSense labeled program can audit, install, or maintain your irrigation system to ensure water isn't wasted. Ask for credentials!

look for WaterSense Meets EPA Criteria

What Is Water-Smart Landscaping?

Water-smart landscaping produces attractive landscapes because it uses designs and plants that are well suited to local conditions.

Water is our most precious natural resource; without it, there is no life. Yet judging by our water use and consumption practices, many Americans take it for granted.

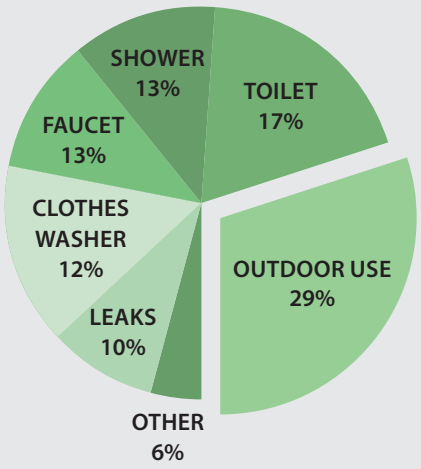
According to the U.S. Geological Survey, the average American uses approximately 80 gallons of water per day—that's nearly 260 gallons used every day by the average family. More and more Americans are demonstrating their water smarts indoors by retrofitting their homes with WaterSense labeled plumbing products and ENERGY STAR® certified appliances. But outdoors, especially in the summer, the amount of water used by a household can exceed the amount used for all other purposes in the entire year. This is especially true in hot, dry climates.

Gardening and lawn care account for the majority of this seasonal increase. Of the estimated 26.6 billion gallons of water used daily by households in the United States, nearly 8 billion gallons, or 30 percent, is devoted to outdoor water use. In dry climates, a household's outdoor water use can be as high as 60 percent. The majority of this is used for watering lawns and landscaping. In fact, it is estimated that the average American home uses 50,500 gallons of water outdoors each year, mostly for irrigation (DeOreo et al., 2016).

Many mistakenly believe that stunning gardens and beautiful lawns are only possible through extensive watering, fertilization, and pesticide application. As this brochure demonstrates, eye-catching gardens and landscapes that save water and protect the environment are, in fact, easily achieved by employing water-smart landscaping.

For specific information about how to best apply water-smart landscaping principles in your geographical area, consult with your county extension service and local garden and nursery centers. Local governments and water utilities also possess a wealth of information, suggestions, and sometimes incentives for using water more efficiently in all aspects of your life, including landscaping.

HOW MUCH WATER DO WE USE OUTDOORS?



Source: DeOreo et al., 2016 and Dieter, et al., 2015

KEY TIPS TO REMEMBER WHEN IT COMES TO WATER-SMART LANDSCAPING:

- **Go native or choose plants that need less water.** Once established, native, regionally appropriate, and low water-using plants require little water beyond normal rainfall. If you're designing a new landscape or just sprucing up your current landscape, be sure to consider the water needs of the plants you choose.
- **Group plants according to their water needs.** Grouping vegetation with similar watering needs into specific "hydrozones" reduces water use by allowing you to water to each zone's specific needs. Turf areas and shrub areas should always be separated into different hydrozones because of their differing water needs.
- **Maintain healthy soils.** Healthy soils are the basis for a water-smart landscape; they effectively cycle nutrients, minimize runoff, retain water, and absorb excess nutrients, sediments, and pollutants.
- **Be selective when adding turf areas.** Turfgrass receives the highest percentage of irrigation water in traditional landscaping. To improve the aesthetics of your landscape and better manage outdoor water use, select drought-tolerant turfgrass and plant turf only where it has a practical function, such as children's play areas.
- **Water wisely.** Know your plants' water needs and avoid watering during the heat of the day. If you have an irrigation system, make regular adjustments to ensure proper watering. And be sure to look for the WaterSense label on components for your system.
- **Go small.** Use microirrigation on plant beds, shrubs, and trees and reserve spray irrigation for turf areas.
- **Use mulch.** Incorporate mulch around shrubs and garden plants to help reduce evaporation, inhibit weed growth, moderate soil temperature, and prevent erosion. Adding organic matter and aerating soil can improve its ability to hold water.
- **Provide regular maintenance.** Replace mulch around shrubs and garden plants at least once per year, and remove weeds and thatch as necessary.

In short, plan and maintain your landscape with these principles of water efficiency in mind, and it will continue to be attractive and healthy while requiring less maintenance and less water.

Why Use Water-Smart Landscaping?

Proper landscaping techniques not only create beautiful landscapes, but also benefit the environment and save water.

Water-smart yards often have increased curb appeal, which can lead to higher home values. In addition to requiring less water, fertilizer, pesticides, and usually less maintenance, water-smart landscapes offer many other benefits:

- Lower water bills from reduced water use.
- Conservation of natural resources and preservation of habitat for plants, pollinators, and other wildlife, such as fish, birds, and waterfowl.
- Decreased energy use, as well as greenhouse gas emissions and air pollution associated with energy generation, because less pumping and treatment of water is required.
- Reduced home or office heating and cooling costs through the careful placement of shade trees and shrubs.
- Reduced runoff of stormwater and irrigation water that carries top soils, fertilizers, and pesticides into lakes, rivers, and streams.
- Fewer yard trimmings to be managed or landfilled.
- Reduced landscaping labor and maintenance costs.
- Extended life for water resource infrastructure (e.g., reservoirs, treatment plants, groundwater aquifers), thus reduced taxpayer costs.

If you've designed a water-smart landscape, you might be able to get all the water you need from rainfall alone. But sometimes, that might not be enough. Whether you water with a hose or use an irrigation system, smart watering habits can keep your lawn and landscape healthy and beautiful without wasting water or money.

WATER-SMART LANDSCAPES VS. XERISCAPES

You may hear the term "xeriscape" when looking for information on water-smart landscaping. The two concepts are very similar and following the principles of either will lead to a water-efficient and attractive landscape.

How Is Water-Smart Landscaping Applied?

Through careful planning, landscapes can be designed to be both pleasing to the senses and kind to the environment.

PLAN BEFORE YOU PLANT

Developing a landscape plan is the first and most important step in creating a water-smart landscape. Your plan should take into account the regional and microclimatic conditions of the site, existing plants, topography, landscape layout, intended uses of the property, and most importantly, the grouping of plants by their water needs. Also consider the plants' sun or shade requirements and preferred soil conditions. A well-thought-out landscape plan can serve as your roadmap in creating beautiful, water-smart landscapes and allow you to continually improve your landscape over time.

GO NATIVE OR CHOOSE PLANTS THAT NEED LESS WATER

Your landscape design should take into account your local climate as well as soil conditions. Focus on preserving as many existing trees and shrubs as possible, because established plants usually require less water and maintenance. Choose native or other regionally appropriate plants. Native plants, once established, require very little to no additional water beyond normal rainfall. Also, because they are adapted to local soils and climate, native plants commonly do not require the addition of fertilizers and are more resistant to pests and disease. Local cooperative extension offices can help you identify regionally appropriate plants.

When selecting plants, avoid those labeled "hard to establish," "susceptible to disease," or "needs frequent attention," as these types of plants frequently require large amounts of supplemental water, fertilizers, and pesticides. Be careful when selecting non-indigenous or exotic species, as some of them can become invasive. An invasive plant might be a water guzzler and will surely choke out native species. Your landscape designer, state or county, or local nursery can help you select appropriate plants for your area.

MAINTAIN HEALTHY SOILS

Because soils vary from site to site, test your soil before beginning your landscape improvements. Check with your local garden center for soil test kits and proper amendments. Alternatively, your county extension service can likely:

- Analyze the pH levels; nutrient levels (e.g., nitrogen, phosphorus, potassium); and the sand, silt, clay, and organic matter content of your soil.
- Suggest ways to improve your soil's ability to support plants and retain water (e.g., by aeration or the addition of soil amendments).

BE SELECTIVE WHEN ADDING TURF AREAS

How and where turf is placed in the landscape can significantly reduce the amount of irrigation water needed to support the landscape. Lawns require a large amount of supplemental water and generally greater maintenance than other vegetation. Use turf where it has a practical function, such as in play or recreation areas. Grouping turf areas can increase watering efficiency and significantly reduce evaporative and runoff losses. Select a type of grass that can withstand drought periods and become dormant during hot, dry seasons. Reducing or eliminating turf areas altogether further reduces water use.

WATER WISELY

Proper irrigation is an important part of using water efficiently outdoors, and applies in any landscape. For this reason, an entire section of this brochure addresses efficient irrigation; it can be found on page 7.

USE OF MULCHES

Mulches aid in greater retention of water by minimizing evaporation, reducing weed growth, moderating soil temperatures, and preventing erosion. Organic mulches also improve the condition of your soil as they decompose. Mulches are typically composed of wood bark chips, wood grindings, pine straws, nut shells, small gravel, and/or shredded landscape clippings. Avoid using rock mulches in sunny areas or around non-arid climate plants, as they radiate large amounts of heat and promote water loss that can lead to scorching. Avoid using too much mulch, as excessive amounts can restrict water flow to plant roots.

APPROPRIATE MAINTENANCE

Water and fertilize plants only as needed. Too much water promotes weak growth and increases pruning and mowing requirements. Like any landscape, a water-smart yard can require regular pruning, weeding, pest control, and possibly irrigation.

As your landscape matures, it will require less maintenance and less water. Cutting turfgrass only when it reaches 2 to 3 inches promotes deeper root growth and a more drought-resistant lawn. As a rule of thumb, mow your turfgrass before it requires more than 1 inch to be removed. The proper cutting height varies, however, with the type of grass, so you should contact your county extension service or local nursery to find out the ideal cutting height for your lawn. Avoid shearing plants or giving them high-nitrogen fertilizers during dry periods because these practices encourage water-demanding new growth.

Water-Smart Landscape Irrigation Methods

Don't let your yard control your water bill.

The information included in this section applies to yards in general, whether they are designed specifically with water efficiency in mind or not.

With today's common watering practices, up to 50 percent of the water applied to lawns and gardens is lost through evaporation, wind, runoff, or being pushed beyond the root zone because it is applied too quickly or in excess of the plants' needs. The goal of efficient irrigation is to reduce these losses by applying only as much water as is needed to keep your plants healthy.

To promote the strong root growth that supports plant health, water deeply and only when the plant needs it. For clay soils, it is recommended to split watering into multiple shorter cycles to allow water time to soak deeper. Irrigating with consideration to soil type, the condition of your plants, the season, and weather conditions—rather than on a fixed schedule—significantly improves your watering efficiency and results in healthier plants. Grouping plants according to similar water needs also makes watering easier and more efficient.

Lawns, gardens, and landscapes can be irrigated manually or with an automatic irrigation system. Manual watering with a handheld hose tends to be the most water-efficient method. Research suggests that households with in-ground sprinkler systems used 50 percent more water than those without (Mayer and DeOreo, 1998).

YARDS WITHOUT AUTOMATIC IRRIGATION SYSTEMS

You can use a handheld hose or a sprinkler for manual irrigation. To reduce water losses from evaporation and wind, avoid sprinklers that produce a fine mist or spray high into the air. Drip irrigation, including soaker hoses can also be very efficient and effective when used properly. Also, consider using a handheld soil moisture probe to determine when irrigation is needed.

GET THE MOST OUT OF YOUR IRRIGATION SYSTEM

- **Set sprinklers to water the lawn or garden only**—not the street or sidewalk, because they don't grow!
- **Play "zone" defense.** Schedule each individual zone in your irrigation system to account for the type of sprinkler, sun or shade exposure, and the soil type for the specific area. The same watering schedule rarely applies to all zones in the system.
- **Consult a professional.** An irrigation professional certified through a WaterSense labeled program can design, install, maintain, and/or audit your system to ensure optimal efficiency and that you are using the proper amount of water to maintain a healthy landscape.

YARDS WITH AUTOMATIC IRRIGATION SYSTEMS

To make automatic irrigation systems more efficient, consider upgrading your standard clock-based controller to a WaterSense labeled irrigation controller, which can use weather or soil moisture data to schedule irrigation only when needed. Adding a rain sensor can help prevent water waste by ensuring that the irrigation system does not turn on during or immediately after rainfall.

WaterSense labeled spray sprinkler bodies with integral pressure regulation can reduce water waste in systems where the water pressure is too high, providing a constant flow at the sprinkler nozzle. Microirrigation is considered the most efficient of the automated irrigation methods because it delivers water directly to the plants' roots.

With automatic systems, overwatering is most common during the fall when summer irrigation schedules have not been adjusted to the cooler temperatures. Irrigation system schedules should be adjusted in each season to account for changes in rainfall and temperatures to prevent over watering in the colder months.

EPA's WaterSense program also recognizes professional certification programs that advance water-efficient irrigation techniques and practices. Whether you're upgrading your system, having it audited, or checking it at the beginning or end of the season, be sure to consult a professional who is certified by a WaterSense labeled program. Always ask for credentials to ensure that your contractor is knowledgeable about your plants' water needs and your irrigation system.

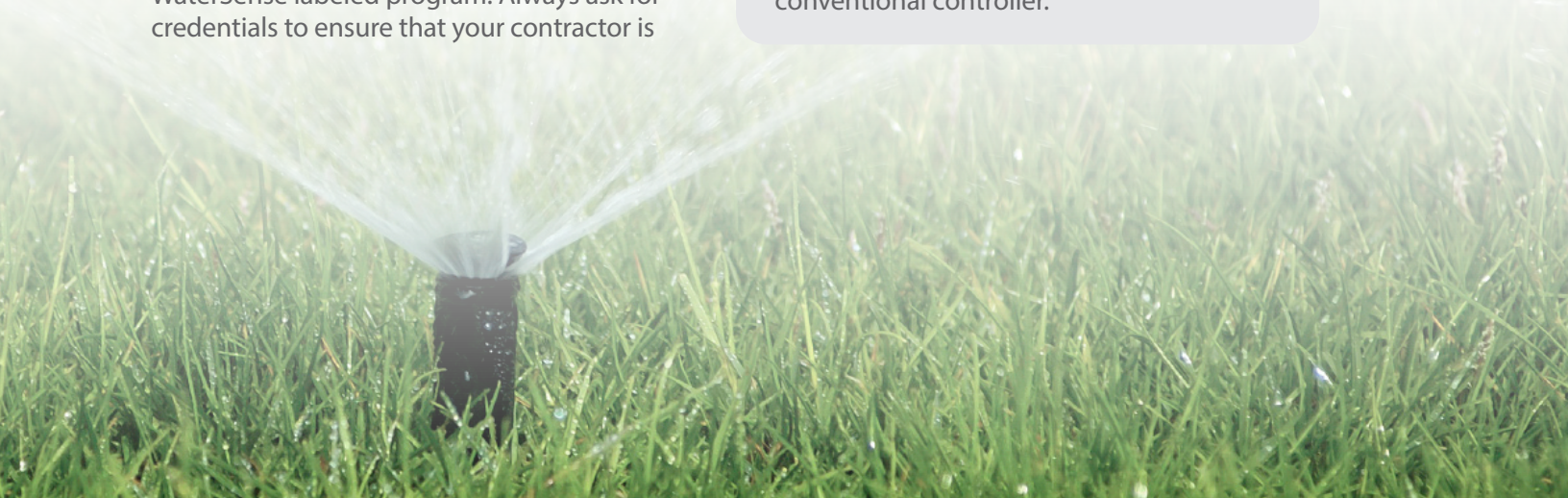
RAINWATER HARVESTING

Saving water from storms with rain barrels or cisterns is a great way to further reduce your water consumption. Homes with access to alternative sources of irrigation can reduce their water bills and the runoff that would otherwise go into the street. Commercial rooftop collection systems are available, but simply diverting your downspout into a covered barrel is an easy, low-cost approach. When collecting rainwater, cover all collection vessels to prevent animals and children from entering and to prevent mosquito breeding. Check with your local water utility or county government to see if there are rebate programs available in your area.

WATERSENSE LABELED IRRIGATION CONTROLLERS—TAKING THE GUESSWORK OUT OF WATERING

WaterSense labels irrigation controllers, a type of "smart" irrigation control technology that uses local weather data or soil moisture readings in the landscape to determine whether your sprinkler system needs to turn on.

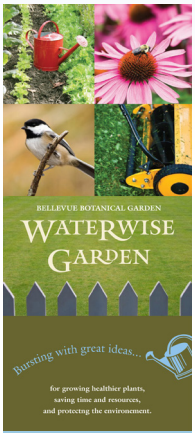
With proper installation, programming, and adjustments, WaterSense labeled irrigation controllers can help consumers save water, time, and money when compared to use of a conventional controller.



Water-Smart Landscape Examples

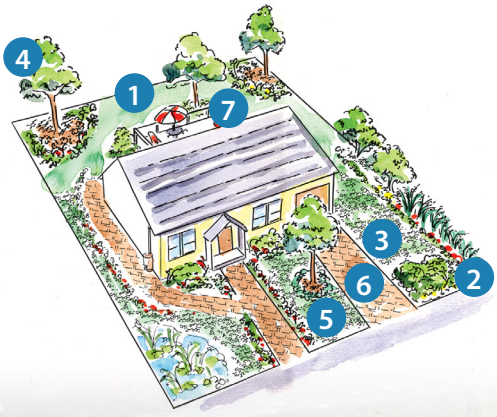
Designing a water-smart landscape can help you save money and water and doesn't have to mean piles of rocks and prickly cacti—in fact, it's just the opposite. Today's yards that incorporate hardy native plants, proper soil amendments, mulch, and smart irrigation systems (where needed), are beautiful, colorful, creative spaces that can add curb appeal and convenience.

Communities, local water utilities, and regional water districts around the country support demonstration gardens that can provide information and inspiration to get you started. Some utilities even offer financial incentives to help you transform your landscape. County cooperative extension offices, master gardeners, and local nurseries can also be great sources of information on native and adaptive plants that can thrive in your local climate.



For a climate that gets a moderate amount of rain with a typically wet summer and a long winter (e.g., some mid-Atlantic areas), this landscape design could be appropriate.

1. Low to medium water-using trees
2. Low to medium water-using groundcover
3. Mulched beds
4. Medium water-using turf
5. Low water-using shrubs



For a dry climate that gets minimal rain such as Austin, Texas, a beautiful, water-smart yard includes a low water-using turf only where it is functional. A good alternative to turf is a drought-tolerant groundcover.

1. Low water-using turf
2. Low water-using shrubs
3. Low water-using groundcover
4. Low water-using trees
5. Mulched beds
6. Permeable pavers
7. Deck

MISSISSAUGA, ONTARIO

Photo credit: Gino Piscelli

This landscape design creates the aesthetics of a traditional garden with low water-using plants, flowers, colors, and textures. In this sunny yard, placing the right plant in the right place was the key to creating a water-smart landscape. The owners installed drought-tolerant plants that thrive in direct sunlight. Mulch was used to help reduce evaporation, inhibit weed growth, moderate soil temperature, and prevent erosion. The landscape requires little to no supplemental water, even during the peak summer months.

BRISTOL, TENNESSEE

This landscape was transformed from turfgrass plagued by stormwater runoff problems into a water-smart paradise. Nearly 75 percent of the lawn was replaced with native wildflowers, trees, shrubs, and grasses that are appropriate for local water conditions. To help reduce runoff, the property also features a 1,400-gallon pond, four rain gardens, a vegetated green roof, and a dry stream bed that collects and routes stormwater into the rain gardens.

Photo credit: Joy Stewart

OLYMPIA, WASHINGTON

Photo credit: Linda Andrews

This compact, no-turf landscape features both edible and drought-tolerant plants. A unique patio of permeable crushed rock and cobalt recycled glass aggregate adds eye-catching interest to the landscape. The plants are efficiently watered by a drip irrigation system, which irrigates slowly to minimize evaporation and runoff. The landscape also features a rain garden that captures rainwater from roofs, driveways, and sidewalks which reduces runoff by allowing stormwater to slowly soak into the ground.

GRANTS PASS, OREGON

Photo credit: John Galbraith

The owners of this home wanted to replace their turfgrass with a fun, low-maintenance landscape cover that was both beautiful and efficient. In keeping with the home's simple, modern features, the new landscape consists of low water-using shrubs, perennials, and ornamental grasses that sweep across the front of the house. The planting areas are dressed with aged bark mulch throughout to reduce evaporation and minimize erosion. An irrigation system utilizing rotary spray heads provides water, when needed, to the plantings.

DEL MAR, CALIFORNIA

This drought-tolerant, regionally appropriate garden turns heads with its year-round color and texture. The owners transformed a high water-using landscape into a water-smart oasis by choosing drought-tolerant plants that require little water beyond normal rainfall. To get the most out of their irrigation system, the owners make use of water-efficient technologies such as rotary spray heads and a weather-based irrigation controller. When needed, the rotary spray heads deliver water in a thick stream, ensuring more water reaches plants and less is lost to evaporation and wind.

Photo credit: Chris Roesink

JUNCTION, TEXAS

Photo credit: Scott Richardson; designed by Billy Kniffen

Junction Middle School's water-savvy landscape features rain gardens and a large palette of native perennials. Five rain gardens capture rainwater from the school's roof, reducing stormwater runoff and increasing infiltration. Nearly 300 native grasses, shrubs, and trees cover the landscape, which needs minimal supplemental water. Mulch covers the soil around the plants, reducing water loss from evaporation. An efficient, drip irrigation system irrigates plants only during the driest months. Volunteer students and adults donated their time to create this conservation landscape, dedicated to the memory of Opal B. Roberts, an exceptional teacher.

FOR MORE INFORMATION

The following list of organizations can provide more information on water-efficient landscaping. This is not an exhaustive list; it is intended to help you locate local information sources and possible technical assistance.

Your community, local water utility, or regional management district can often provide information on water conservation, including water-efficient landscaping practices. Your state or county extension service is also an excellent source of information. Many extension services provide free publications and advice on home landscaping issues, including tips on plant selection and soil improvement. Some also offer a soil analysis service for a nominal fee. A directory of Cooperative Extension System Offices and programs associated with public universities can be found at https://nifa.usda.gov/land-grant-colleges-and-universities-partner-website-directory?.

A directory of Master Gardener programs can be found on the American Horticultural Society's website, https://ahsgardening.org/gardening-resources/master-gardeners/.

The WaterSense website (**www.epa.gov/watersense**) can link you to a number of additional resources, including information on how to choose the right plants for your landscape (**www.epa.gov/watersense/what-plant**) and how to find an irrigation professional certified by a WaterSense labeled program (**www.epa.gov/watersense/irrigation-pro**).

To contact WaterSense call toll-free (866) WTR-SENS (987-7367) or at watersense@epa.gov.

RESOURCES AND ACKNOWLEDGEMENTS

This brochure was adapted in 2012 from a 2002 EPA publication, *Water-Efficient Landscaping: Preventing Pollution and Using Resources Wisely*. The 2002 brochure on water-efficient landscaping included technical advice from Alice Darilek, Elizabeth Gardner, and David Winger. This 2021 version updates the brochure to reflect new information about water-efficient practices and WaterSense labeled products.

The following is a partial list of publications on resource-efficient landscaping. For more information, particularly on plants suited to your locale, consult your local library, county extension service, nursery, garden clubs, or water utility.

DeOreo, Mayer, Dziegielewski, and Kiefer, 2016. Residential End Uses of Water, Version 2. Published by the Water Research Foundation.

Dieter, Cheryl. et. al. Estimated Use of Water in the United States in 2015, U.S. Geological Survey Circular 1441. Department of Interior. https://usgs.gov/water-use

EPA's WaterSense program. Irrigation Controllers. www.epa.gov/watersense/watersense-labeled-controllers.

EPA's WaterSense program. Landscaping Tips. www.epa.gov/watersense/landscaping-tips.

EPA's WaterSense program. Spray Sprinkler Bodies. www.epa.gov/watersense/spray-sprinkler-bodies.

EPA's WaterSense program. 2018. Saving Water With Microirrigation: A Homeowner Guide. www.epa.gov/sites/production/files/2018-05/documents/ws-outdoors-microirrigation-homeownerguide.pdf.

Fairfax Water. July 2019. WaterWise Landscaping and Watering Guide. Fairfax, VA. www.fairfaxwater.org/news/water-wise-landscaping-watering-guide.

Mayer, Peter W. and William B. DeOreo. Residential End Uses of Water. Aquacraft, Inc. Water Engineering and Management. American Water Works Association. 1998.

New Mexico Office of the State Engineer Water Use and Conservation Bureau. 2019. New Mexico's Enchanted Xeriscape Guide. www.ose.state.nm.us/WUC/LearningXeriscape/XeriscapeGuide_ScreenResolution.pdf.

Rosenberg, David E., et al. June 2011. Value Landscape Engineering: Identifying Costs, Water Use, Labor, and Impacts to Support Landscape Choice. Journal of the American Water Resources Association (JAWRA) 47(3):635-649.

San Diego Water Authority. 2019. A Homeowner's Guide to a WaterSmart Landscape. www.watersmartsd.org/wp-content/uploads/2019-HOG-Web.pdf.

San Diego Water Authority. 2018. San Diego Sustainable Landscapes Guidelines: A Watershed Approach to Landscaping. www.watersmartsd.org/wp-content/uploads/SLP-Guidelines.pdf.

Sunset Publishing Corporation. 2009. Easy water-wise gardening. www.sandiego.gov/sites/default/files/legacy/water/pdf/waterwisegardening.pdf.

University of California Division of Agriculture and Natural Resources. WUCOLS IV: Water Use Classification of Landscape Species. https://ucanr.edu/sites/WUCOLS/.

Valley Water. Landscape Guides & Resources. www.valleywater.org/saving-water/outdoor-conservation/landscape-guides-resources.

Illustrations by Mindy Mitchell.

U. S. Environmental Protection Agency
(4204M)

(866) WTR-SENS (987-7367)
watersense@epa.gov

EPA WaterSense Program

EPA 832-K-12-2002
October 2021

Deer Resistant Design

Landscaping to protect and conserve Austin's water

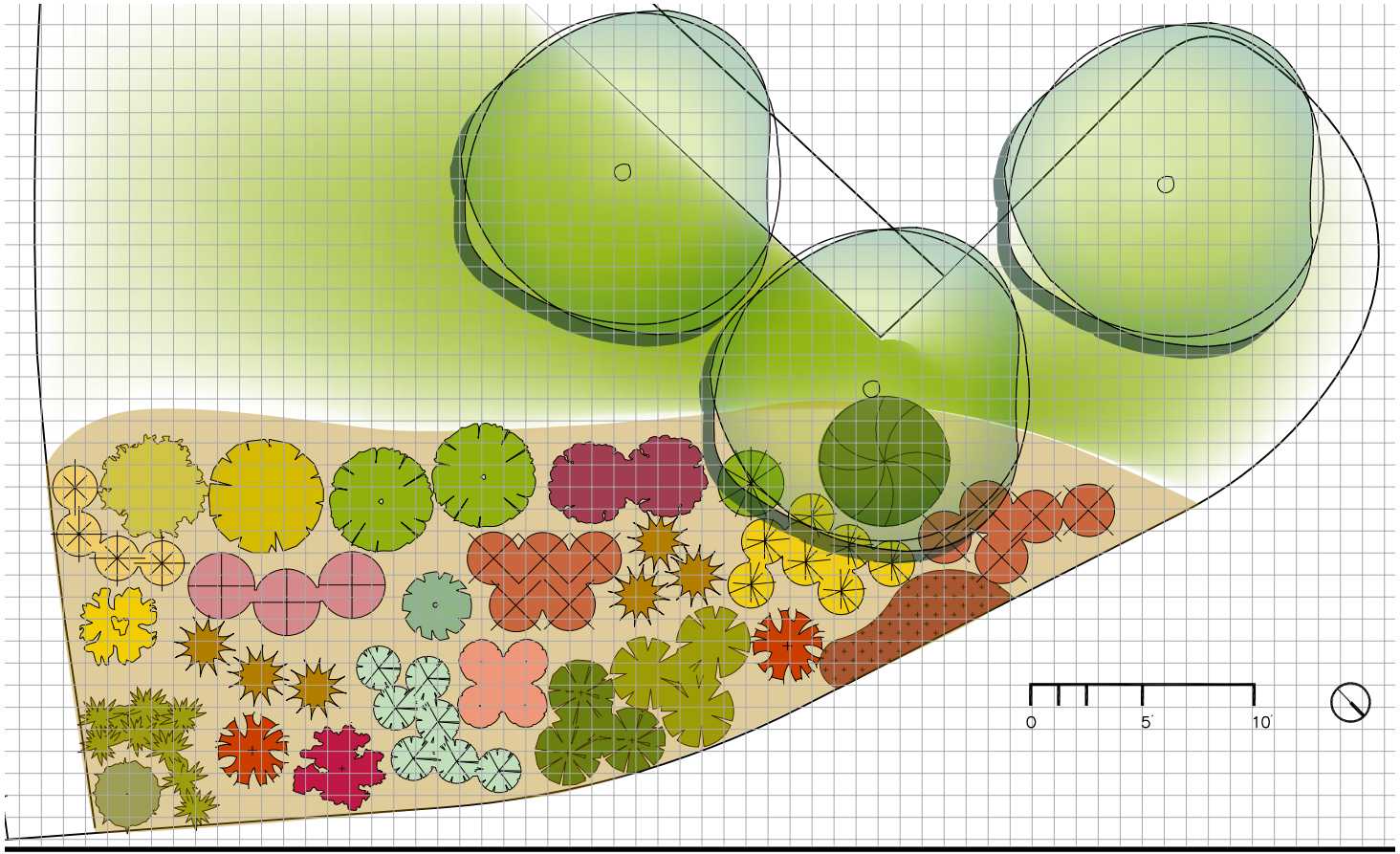
Demonstration garden located at: **One Texas Center - 505 Barton Springs Road, Austin, Texas**
(northeast side)

Do you live outside central Austin and have trouble finding pretty plants that deer don't love to munch on? Deer will eat almost any vegetation if they are very hungry, but this design includes some of the most attractive, deer resistant plants in the area.

Yellow Bells

Pink Skullcap

White Mistflower



plant key

trees

- live oak

shrubs

- evergreen sumac
- american beautyberry
- dwarf barbados cherry
- prostrate rosemary

perennials

- lamb's ear
- society garlic
- 'new gold' lantana
- calylophus
- skeletonleaf goldeneye
- yellow bells
- mexican feathergrass
- white mistflower
- texas betony
- wooly stemodia
- black and blue sage
- dwarf mealy blue sage
- pink skullcap
- autumn sage
- indigo spires
- yellow columbine
- bicolor iris
- moss verbena

DEER RESISTANT

Light:

Sun

Soil Needs:

- Amend existing soil with 2-3” of compost
- Be sure that your total soil base is 6-8” deep
- If additional soil is needed, use a good quality soil mix (approximately 25% compost, 65% loam and 10% sand

Water Needs:

Once established, these plants require little to no water. If plants look wilted, however, water thoroughly every 3-4 weeks if there is no rainfall

Irrigation:

- Hand-watering is recommended
- If you must use an irrigation system.. Choose one with bubblers and/or drip irrigation

Turf:

If you’d like to add turf to a sunny yard, Zoysia is recommended. Bermuda is also drought tolerant, but can invade your plant beds

www.growgreen.org

Earth-Wise Gardening Tips:

- Plant the right plant in the right place based on sunlight required
- Mulch all beds to retain water and reduce weeds; although there are many mulch alternatives, decomposed granite is a good alternative for the many native plants in this design
- If adding turf, use St. Augustine grass only in shaded areas
- To be safe, all woody plants in areas with deer need to be protected when plants are young and until they grow above the browse line
- Plant characteristics that may deter deer include aromatic plants, plants with spines, thorns, fuzzy leaves, and bad-tasting sap
- If installing outdoor lights, avoid those that direct the glow upward - it can interfere with bird migration
- Reduce turf to meet your aesthetic or family needs because grass generally requires more water and chemicals to maintain
- Use pervious pavement that allows water to soak into the ground and/or the surrounding landscape such as stone without mortar, mulch, or pervious concrete
- Use rainbarrels to capture and reuse rainwater if possible

For a driving or biking map to this and other demonstration gardens or for more earth-wise gardening tips, visit **www.growgreen.org**

For water conserving tips and rebates, visit **www.waterwiseaustin.org**

City of Austin Watershed Protection 512-974-2550

Texas A&M AgriLife Extension 512-854-9600

Austin Water 512-974-2199 Clearly Reliable

Be Water Wise at Home

Turn off the water while you brush your teeth and save up to 2 gallons a minute. That's over 220 gallons a week for a family of four. Plug the sink instead of running the water to rinse your razor and save up to 200 gallons a month.

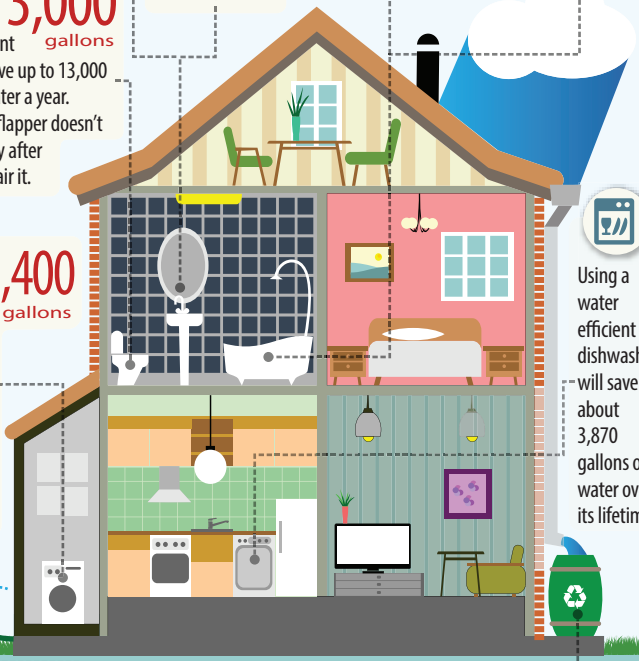
A faucet leaking at a rate of one drop per second can waste up to 3,000 gallons of water a year.

Reducing a 10-minute shower using a standard showerhead to 5 minutes will save 12.5 gallons of water in each occasion.

Install more efficient fixtures. A water-efficient showerhead can save the average family 2,900 gallons of water and $70 in energy and water costs a year.

13,000 gallons

Water-efficient toilets can save up to 13,000 gallons of water a year. If your toilet flapper doesn't close properly after flushing, repair it.



3,400 gallons

Save up to 3,400 gallons of water a year by washing laundry only when the machine is full.

Using a water efficient dishwasher will save about 3,870 gallons of water over its lifetime.

Water wisely

Avoid watering your lawn or garden in the middle of the day. Watering before dawn and after dusk allows for water to be absorbed instead of evaporating in midday heat.

10% = 32 billion

Store and use rainwater. By collecting rainwater from just 10 percent of the residential roof area in Texas, we could conserve more than 32 billion gallons of water annually.

Take Care of Texas. It's the Only One We've Got!
TakeCareOfTexas.org
A PROGRAM OF TCEQ

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

How is our customer service?
www.tceq.texas.gov/customersurvey

M-68 (revised 5/20) | *TakeCareOfTexas.org/publications* | *Printed on recycled paper using vegetable-based ink*
(formerly GI-370)

Sea Prudente con el Agua en Casa

Cierre la llave mientras se cepille los dientes y ahorre hasta 2 galones de agua por minuto. Esto sería hasta 220 galones por semana para una familia de cuatro.

Tape el lavabo en lugar de dejar que corra el agua para enjuagar su rastrillo de afeitar y ahorre hasta 200 galones al mes.

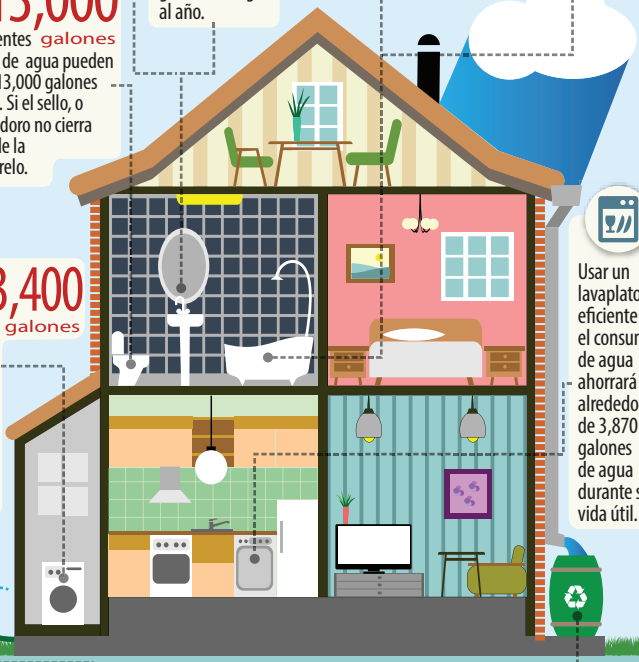
Una llave que gotea una gota por segundo puede desperdiciar hasta 3,000 galones de agua al año.

Reducir una ducha de 10 minutos usando un cabezal de regadera estándar a 5 minutos ahorrará 12.5 galones de agua en cada ocasión.

Instale dispositivos de plomería más eficientes. Un cabezal de regadera eficiente en agua puede ahorrarle 2,900 galones de agua y $70 en costos de energía y agua al año a la familia promedio.

13,000 galones

Inodoros eficientes en el consumo de agua pueden ahorrar hasta 13,000 galones de agua al año. Si el sello, o sapo, de su inodoro no cierra bien después de la descarga, repárelo.



3,400 galones

Ahorre galones hasta 3,400 galones de agua al año lavando ropa sólo cuando la maquina esté llena.

Usar un lavaplatos eficiente en el consumo de agua ahorrará alrededor de 3,870 galones de agua durante su vida útil.

Riegue prudentemente

Evite regar su césped o jardín en pleno día. Regar antes del amanecer o después del atardecer permite que el agua se absorba en lugar de evaporarse en el calor del mediodía.

10% = 32 mil millones

Capte y use agua de lluvia. Captando agua de lluvia de sólo el 10 por ciento de los techos residenciales en Texas, podríamos conservar más de 30 mil millones de galones de agua anualmente.

Take Care of Texas. It's the Only One We've Got! TakeCareOfTexas.org A PROGRAM OF TCEQ

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

¿Cómo le parece nuestro servicio al cliente?
www.tceq.texas.gov/encuesta

M-68 (revisado 5/20) | *TakeCareOfTexas.org/es/publicaciones* | *impreso en papel reciclado usando tinta vegetal*
(previamente GI-370)

CONSERVING WATER IS GOOD FOR BUSINESS

- American Airlines Maintenance Base in Fort Worth implemented a program to recycle water and minimize hazardous waste. They expanded a reverse-osmosis system to treat 40 million gallons of wastewater, converted an existing treated-effluent tank into a reverse-osmosis tank, and upgraded an outdated automation control system. The project reduced total water usage by 24 to 36 percent and reduced costs by almost $1 million. In addition, the amount of hazardous waste in one year was reduced by more than 50 percent.
- Freescale in Austin uses Ultra Pure Water for manufacturing microchips. In order to save millions of gallons of wastewater and potable water, Freescale implements a rigorous reuse and recycling program. Since 2006, Freescale has reduced wastewater by more than 50 percent and reduced potable water by more than 51 percent. The high percentage of water savings comes from operational processes that reuse and recycle the majority of process water. In 2007, Freescale saved more than 160 million gallons of water and more than 90 million gallons of wastewater through conservation efforts.
- The Frito-Lay plant in San Antonio has saved 1 billion gallons of water a year since implementing conservation efforts in 1999. Frito-Lay recycles the water used to make potato and corn snacks and has reduced fresh water use in these processes by 35 to 50 percent.

REASONS TO CONSERVE WATER

Will conserving water hinder business profitability? No. Conserving water can help increase profits. Some of the financial benefits to consider when evaluating water conservation are:

1. **Reduced costs**—water costs account for 1–2 percent of a business' overhead. Saving water can help reduce overhead costs.
2. **Increase in future water prices**—water prices are set to rise above inflation. Saving water now will reduce costs in the future.
3. **Production efficiency**—using water efficiently will make additional water available for future production.
4. **Tax benefits**—many government agencies and water utilities provide rebates, grants, and tax relief to encourage water conservation. Tax benefits keep money where it belongs, in your pocket.

In Texas, various tax exemptions can be given for:

- Rainwater harvesting systems
- Water recycling and reuse systems
- Desalinization systems
- Wastewater systems certified by the Texas Commission on Environmental Quality
- Brush control equipment designed to increase water availability

For more information about water conservation, contact your local water supplier or the Texas Water Development Board.

Sources:
American Water Works Association, www.awwa.org.

East Bay Municipal Utility District, 2008, Watersmart guidebook: Oakland, East Bay Municipal Utility District, 242 p.

Seneviratne, M., 2007, A practical approach to water conservation and industrial facilities: Burlington, Mass., Butterworth-Heinemann, 380 p.

Vickers, A., 2001, Water use and conservation: Amherst, Mass., Waterplow Press, 464 p.

Texas Water Development Board
www.twdb.state.tx.us
P.O. Box 13231
Austin, Texas 78711-3231

WATER IQ SM

Visit the following Web sites for additional information.

www.wateriq.org

www.epa.gov/watersense

Printed on recycled-content paper

WATER CONSERVATION FOR INDUSTRIES, BUSINESSES, AND INSTITUTIONS

USING WATER EFFICIENTLY makes good business sense. With rising costs of operations for many businesses, conserving water is one way to cut costs without compromising products or services. Texas' soaring population and dwindling water supplies have prompted communities to begin conservation programs, many of which provide financial incentives to businesses that establish water-saving practices.

Numerous businesses in Texas have already instituted significant conservation measures. As a result, they have reaped both financial and environmental benefits, demonstrating that water conservation can improve the bottom line.

GETTING STARTED

Your first priority should be to perform a water audit of your building, including the grounds. Water audits vary from business to business and can range from simple to extensive. For information on performing a water audit for your business or institution, visit the TWDB Web site:
www.twdb.state.tx.us/assistance/conservation/Municipal/ici.asp

Information is also available on these Web sites:
Alliance for Water Efficiency
www.allianceforwaterefficiency.org/Water_Audit_Process_Introduction.aspx

American Water Works Association
www.awwa.org/Resources/Content.cfm?ItemNumber=590

WATER SAVER CHECKLIST

Choose water-efficient appliances to help reduce water use. Other suggestions on where water can be conserved are listed below.

Maintenance

- Sweep instead of using a hose
- Use a high-pressure nozzle when a hose is necessary
- Clean windows only when needed

Building Operations

- Check for and repair leaks
- Meter all major uses separately
- Read water meters regularly to track potential leaks
- Shut off water to unused areas
- Keep employees informed
- Use automatic shut-off valves for equipment that is not in operation
- Examine ways to modify processes
- Install self-closing, air-cooled water fountains
- Use gray water for irrigating landscape

Food Service

- Provide water only on request
- Thaw food in refrigerator or microwave
- Scrape dishes instead of rinsing
- Install high-pressure, low-volume spray washers
- Replace worn washers
- Wash full loads only
- Reuse final rinse water for prewash or garbage disposal
- Install dishwashers with automatic shut-off valves
- Use air-cooled or flake ice machines
- Don't use running water to melt ice

Laundries

- Wash full loads only
- Recycle final rinse water for pre-wash
- Install sub-meters to track potential leaks
- Recover steam condensate and/or vented flash steam

Process Use

- Eliminate once-through cooling
- Meter water use
- Recycle and reuse water
- Install automatic shut-off valves
- Use air-cooled systems
- Alter process filtering to maximize product recovery
- Separate water process streams

Restrooms

- Check for and repair leaks
- Remind users to conserve
- Retrofit older fixtures
- Install low-flow showerheads and faucets
- Install metered or sensor faucets
- Install high-efficiency toilets and waterless urinals
- Consider foam flush or waterless toilets

Vehicle Washing

- Wash vehicles only when needed
- Adjust solenoids, valves, nozzles, and equipment to minimize water use
- Use high-pressure washes
- Inspect and replace worn jets and parts
- Install water recycling equipment
- Consider waterless washing techniques

Cooling and Heating

- Meter and record water use
- Check for and repair leaks

Cooling Systems and Towers

- Install a recirculating system
- Reuse blowdown for irrigation
- Reuse treated water for makeup water
- Use air cooling where possible
- Consider evaporative cooling
- Consider hybrid cooling towers
- Consider side-stream filtration or pulse power treatment

Boilers and Heaters

- Check and replace steam traps regularly
- Reuse condensate and blowdown

Pools and Spas

- Check for and repair leaks
- Cover pools when not in use
- Lower the temperature when not in use
- Keep filters clean to reduce backwash
- Adjust pool levels to minimize splash out
- Consider alternative water treatments

X-ray Processing/Labs

- Equip x-ray processors with shut-off valves
- Reduce the flow rate to the processors to a rate of 2 gallons per minute or less
- Eliminate continuous water streams for aspiration of liquids or other purposes
- Eliminate single-pass cooling of instrument analyzers
- Use sterilizers that re-circulate cooling water
- Install silver recovery systems
- Install flow restrictors on water-ring vacuum pumps or replace with oil-ring pumps

Landscape

- Check for and repair irrigation system leaks
- Use drought-tolerant native plants and turf
- Adjust sprinklers to irrigate landscape only
- Water deeply but infrequently
- Water during early morning or evening hours
- Install timers and moisture sensors
- Use drip irrigation
- Use fertilizer sparingly
- Install shut-off nozzles on hoses