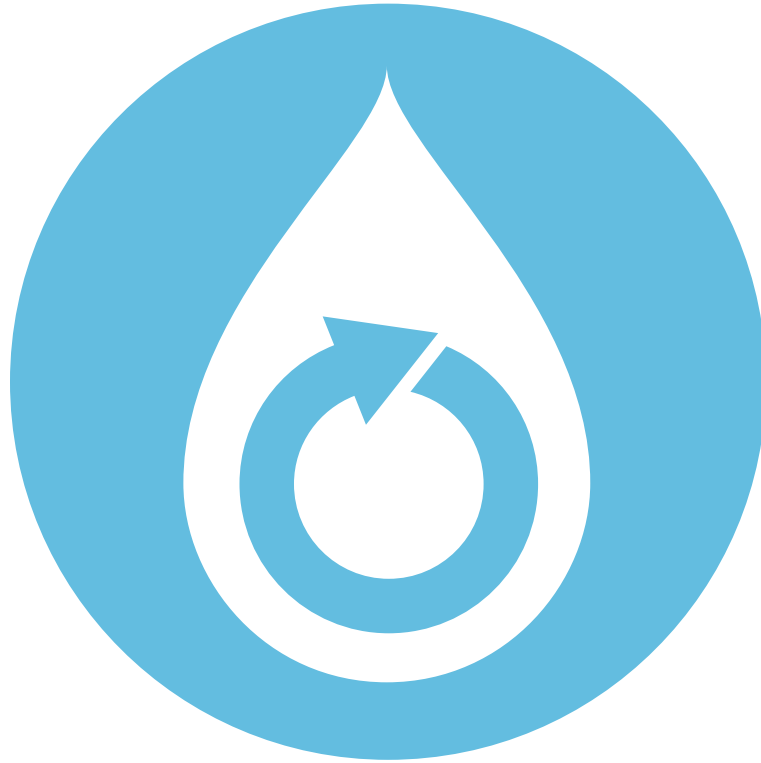


Sustainable**Works**



Water

"By means of water, we give life to everything."

~Koran, 21:30

Water

The Colorado River is shrinking, as are many of the world's fresh water sources. People are draining away huge quantities of water for personal use...Agricultural and industrial uses are depleting even more of our supply of fresh water. For instance, water is used in the manufacture of goods like cotton T-shirts and paper. People are tapping into Earth's fresh water at an unsustainable rate. As the world's population grows, the demand for this precious liquid is increasing. "Ensuring that everyone has enough fresh water will be one of the major issues facing us this century," says Sterling.

*Judith Jango-Cohen
Earth Water, 2007*

Low water productivity is often the result of low water prices. In many countries, subsidies lead to irrationally low water prices, creating the impression that water is abundant when in fact it is scarce. As water becomes scarce, it needs to be priced accordingly.

*Lester Brown
Plan B 3.0*

Do You Ever?

- Ignore a leaking faucet?
- Take a long shower?
- Leave the water running while you brush your teeth or shave?
- Run the dishwasher half full?
- Pour chemical cleaners down the drain?
- Hose off your driveway?
- Wash your car on the driveway and also leave the water running?
- Eat beef?



Southern California's Water Reserve Levels

Source: The Metropolitan Water District of Southern California (2009) ¹

Problems

Key Issues

- ❑ Even though water covers two thirds of the surface of our planet, the **freshwater** in rivers, lakes, and streams represent only 1/10 of 1 percent of the earth's total water²
- ❑ Polar snow and ice are melting, and the average sea level around the globe is rising. Earth is warming faster than at any time during the twentieth century.³
- ❑ The International Panel on Climate Change has concluded that within the next 100 years, sea level could rise as much as 23 inches, flooding coasts worldwide. As sea levels rise, coastal communities could lose up to 50 percent more of their fresh water supplies than previously thought.⁴
- ❑ Climate change is expected to lead to reductions in water supply in most regions in the United States. Scientists predict significant loss of snowpack in the western mountains, a critically important source of natural water storage for California and other western states.⁵
- ❑ Within 60 years the Arctic Ocean could be a stagnant, polluted soup. Without drastic cuts in greenhouse-gas emissions, the Transpolar Drift, one of the Arctic's most powerful currents and a key disperser of pollutants, is likely to disappear because of global warming.⁶
- ❑ About one-third of the world's population lives in countries with moderate-to-high water stress. By 2020, water use is expected to increase by 40 percent, and 17 percent more water will be required for food production to meet the needs of the growing population. According to another estimate from the United Nations, by 2025, 1.8 million people will be living in regions with absolute water scarcity, and two out of three people in the world could be living under conditions of water stress (UNEP 2007).⁷
- ❑ A plastic vortex of trash twice the size of Texas floats about 1,000 miles off the coast of California, invisible to the naked eye. The plastic and toxins it attracts have become a part of the Pacific Ocean's ecosystem, killing everything from fish to birds to sea turtles.⁸

Global

- ❑ The Intergovernmental Panel on Climate Change, set up by the United Nations, predicted in 2007 that even slight warming would decrease agricultural output in tropical and subtropical countries.
- ❑ The chief executive of the National Farmers' Federation in Australia, Ben Fargher, says, "Climate change is potentially the biggest risk to Australian agriculture."⁹
- ❑ Six long years of drought have taken a toll, reducing Australia's rice crop by 98 percent and leading to the mothballing of the mill last December.¹⁰
- ❑ 600 million people in India make a living off the land. That is about 60% of India's population of 1.1 billion. Most of the country is suffering from a rain deficit. In 2009 the monsoon was delayed in some parts of the country. In developed countries, irrigation is common and electricity readily available, but both are a luxury for most Indian farmers. Rainwater is key to crop survival and the livelihoods of those who work the farms.¹¹
- ❑ In February 2009, China narrowly escaped a loss of its wheat crops due to a dire drought, which covered almost half of China's winter wheat fields.¹²
- ❑ Scientists found that when plastics decompose in the ocean they release a range of chemicals, such as bisphenol A and substances known as polystyrene-based (PS) oligomers, which are not found naturally. Bisphenol A has been implicated in disrupting the hormonal system of animals.¹³

National

- ❑ While scientists account for various human diversions of water for city and farm use- the sort of uses that shrink the Colorado River from a whitewater gusher in the Grand Canyon to a mere trickle by the time it reaches the U.S.-Mexican border – studies show that global climate change matters more.¹⁴
- ❑ In 2009, Texas state climatologist John Nielsen-Gammon said that at least nine of the 254 counties in Texas — the nation's most drought-stricken state — are suffering through their driest conditions since modern record-keeping began in 1895.¹⁵
- ❑ An epic drought in Georgia threatens the water supply for millions. Florida doesn't have nearly enough water for its expected population boom. The Great Lakes are shrinking. Upstate New York's reservoirs have dropped to record lows. And in the West, the Sierra Nevada snowpack is melting faster each year.¹⁶

- ❑ In Texas, half the corn crop is dried up, lakes have disappeared, cattle ranchers are selling cows early because there is no grass to graze on, and 77 counties are designated as having exceptional or extreme drought conditions. Historians say this drought is virtually unprecedented, and there is no relief in sight.¹⁷
- ❑ In May 2009, Brockton, Massachusetts, inaugurated a brand-new, \$60 million reverse osmosis desalinization plant to supply a portion of its drinking water. The Atlantic coast city, which receives four feet of rain annually, was nevertheless so short of freshwater that it was converting brackish water into water people actually could drink.¹⁸
- ❑ In the U.S., typical inefficient indoor water use is 80 gallons per person per day.

Local

- ❑ 2009 marks the third year of drought in California. Below average precipitation and runoff began in the fall of 2006. Snowpack, precipitation, runoff, and reservoir storage help evaluate current water supply.¹⁹
- ❑ In Southern California's hot, dry areas, landscape irrigation can account for as much as 70 percent of the summer water use in single-family homes.²⁰ In Santa Monica it accounts for 40-50%.²¹
- ❑ Many of our natural creeks have been concreted over, so they are unable to percolate water and naturally cleanse out pollutants. Concrete channels also rob us of natural recreational areas, wildlife habitats, and can create flooding hazards near our homes.
- ❑ Twenty-one of California's coastal power plants utilize outdated once-through cooling technology (OTC), in which intake pipes, drawing in millions of gallons of ocean water daily to cool the plant, kill plankton, fish, invertebrates, and other marine life. Then, the heated water is released back into the fragile ocean environment.²²
- ❑ Advocates of desalination tout its potential for limiting strain on scarce water supplies, and easing the environmental consequences of diverting freshwater from rivers and streams and pumping it long distances to urban centers. But critics cite major environmental drawbacks -- namely the harm to marine life from intake pipes that suck water into desalination plants and from the highly concentrated brine byproduct that gets discharged back into the ocean.²³
- ❑ Desalination plants are more expensive than recycling water and requires an enormous amount of energy.
- ❑ For the first time in the state's history, the water supply and delivery system may not be able to meet Southern California's growing needs. From aging infrastructure to population growth to climate change, we face a complex set of problems that threaten the future of California's population, economy and environment.²⁴
- ❑ One-third of the total energy consumed in California is used to move water around the state. By saving water you also save energy.²⁵
- ❑ In 2009, California ranked among the worst in beach water quality nationwide, coming in 22nd out of 30 coastal states. Los Angeles County was home to the most polluted beach water, with 20% of samples exceeding state standards. Bacteria can flow into beach water from sewage accidents. Storm water flowing through urban areas can also pick up animal waste, fertilizer, motor oil and other contaminants that are dumped into the ocean.²⁶
- ❑ Santa Monica Bay is one of the country's most important natural **resources**, providing the two million-plus humans who live in its **watershed** with a mild climate, aesthetic beauty, recreation, food, fresh oxygen, and commercial opportunities.²⁷ The large and well-known Santa Monica Bay Watershed is actually comprised of numerous smaller watersheds. To find your local watershed and where it drains into, go to www.epa.gov/surf. It's important to remember that runoff from all watersheds within the Santa Monica Bay Watershed drain directly into the Bay – unfiltered. This means that trash on your street may eventually end up floating next to you at the beach!

Solutions

Top 3 Things You Can Do About Water Issues

1. Find and Fix Leaks
2. Install Water-Saving Devices
3. Eat lower on the food chain to help conserve water and to minimize pollution.

Check the box next to the three solutions you commit to doing.

1. Find and fix leaks.

Leaking faucets and toilets account for as much 20 gallons of water lost per person per day. *A leaky toilet can waste 200 gallons per day*²⁸. Local ordinances require that all leaks be fixed immediately.

- Find leaks.
 - To detect leaks in the toilet, add a colored liquid to the tank water and wait 15 minutes. If the colored water appears in the bowl, the toilet is leaking. (Flush as soon as the test is done, since food coloring may stain the bowl.)
 - To detect other leaks, read your water meter when no water is used. If the red triangle on meter is spinning when no water is being used, you have a leak. Most replacement parts for the toilet are inexpensive, readily available, and easily installed. Be sure to only use your toilets manufactory's products. For an excellent online primer on toilet repair, visit www.toiletology.com.²⁹
 - Regularly check for leaks in your sprinkler system. This can waste 600 gallons per month.³⁰
- Fix leaks.
 - Apartment renters should inform landlords of any leaks immediately. Landlords are required to fix them.

2. Install water-saving devices.

*A family of four could save 14,000 gallons of water a year if they installed a water-saving showerhead*³¹. *High-efficiency toilets and showerheads can save the average household about 30 gallons of water each day*³². *Check with the City of Santa Monica or your local water agency for free products.*

- Install a water-saving showerhead.
 - We recommend you replace an existing showerhead if a one gallon bucket placed under the flow takes less than 20 seconds to fill. A low flow showerhead uses 2.5 gallons of water or less per minute. Your traditional showerhead uses 5 or more gallons per minute!
 - An ultra low flow showerhead uses 1.5 gallons of water per minute.
- Install aerators on your kitchen and bathroom faucets. Installing aerators reduces the water flow and adds air to the water so you'll feel a greater pressure. *Install an aerator on your bathroom and kitchen faucet to reduce indoor water use by as much as 4%*³³. *Visit the Support Tools for instructions on how to install a faucet aerator.*
- Install an high-efficiency toilet. In most households in the US, about 30 percent of the water used is flushed down the toilet.³⁴ High-efficiency toilets use only 1.28 gallons of water or less per flush, which is less than half the water of older toilets.
- Install a low flow nozzle on your garden hose.

3. Eat lower on the food chain to help conserve water and to minimize pollution.

- ❑ Producing beef and other water-intensive foods results in higher land use and pollution of the surrounding environments. For example, California officials identify agriculture, including cows, as the major source of nitrate pollution in more than 100,000 square miles of polluted groundwater.³⁵
- ❑ Nutrients in animal waste cause algal blooms, which use up oxygen in the water, contributing to a "dead zone" in the Gulf of Mexico where there's not enough oxygen to support aquatic life. The dead zone fluctuates in size each year, extending over 5,800 square miles during the summer of 2004 and stretching over 7,700 square miles during the summer of 1999.

Amount of water required to produce one pound of Californian foods³⁶

Food	Gal embodied Water / pound
Lettuce	24
Oranges	48
Broccoli, fresh	64
Plain yogurt	156
White flour	276
Eggs	478
Chicken	660
Cheese	896
Beef	2464

For a 2.0 gpm showerhead and an average 7 minute shower, **1 pound of beef equals the same amount of water used in approximately 6 months of daily showers.**

❑ 4. Change your behavior.

Aside from the need to conserve water because it is a non-renewable resource, curbing our water appetite will also reduce the energy and chemical demands used to treat our sewage and septic systems. This treated water then needs to be recycled or dumped into our waterways, which can upset the natural balance of local wildlife. More water to be treated and disposed of also means higher utility rates for all of us.

- ❑ Turn off the water while shaving or brushing teeth- *Turning off the water when brushing your teeth or shaving can save more than 5 gallons (19 liters) of water per day.*
- ❑ Take short showers instead of tub baths. *Taking a quick shower rather than a bath can save an average of 20 gallons (76 liters) of water per shower.*
- ❑ Turn off the water while lathering with soap or shampooing.
- ❑ Keep a bucket or a large pitcher in the bathroom/kitchen to capture excess water while you are waiting for the hot water to make it to the faucet. Use this water for your pets, plants, to wash produce, to cook with, etc.
- ❑ Reduce water flow in sinks so it comes out no stronger than the width of a pencil. One option for doing this is to adjust the water flow altogether by adjusting the knobs underneath the bathroom and kitchen sinks.
- ❑ Keep drinking water in the refrigerator instead of letting the faucet run until the water is cooled.
- ❑ Wash fruits and vegetables in a basin rather than under running water.
- ❑ Allow frozen foods to thaw in refrigerator overnight.
- ❑ Scrape, rather than rinse, dishes before loading into the dishwasher.
- ❑ Add food wastes to your compost pile instead of using the garbage disposal.
- ❑ Sweep driveways, sidewalks and steps rather than hosing off.
- ❑ Wash the car with a waterless car wash product, water from a bucket, or consider using a commercial car wash that recycles water.
- ❑ If you have a pool, use a cover to reduce evaporation when the pool is not being used.

❑ 5. Buy water saving appliances.

- ❑ **WaterSense**, a partnership program sponsored by the U.S. Environmental Protection Agency (EPA), is making it easy to find and select water-efficient products with a label backed by independent testing and certification. WaterSense will also recognize professional service programs that incorporate water efficiency. **Generally speaking, WaterSense labeled products will be about 20 percent more water efficient than their less efficient counterparts in the same category.** In addition, WaterSense labeled products perform their intended function as well as or better than their less efficient counterparts, while lowering your water bill.



- ❑ Consider purchasing a horizontal axis (h-axis) washing machine or “front loader”. *Unlike standard vertical axis washing machines, which immerse clothes in water and scrub them clean by agitation, horizontal axis (h-axis) machines use a tumbling action to clean clothes. Clothes are gently lifted and plunged through the detergent and water. Front loaders can reduce water usage by 40 percent and use up to 65 percent less electricity.*³⁷ Santa Monica residents visit www.sustainablesm.org/rebate or call your local water supplier to see if they have any rebate offers.

❑ 6. Increase the efficiency of your appliances.

- ❑ Operate the clothes washer only when completely full.
- ❑ Use the appropriate water level or load size selection on the washing machine-*Clothes washers can use as much as 30-35 gallons (114-133 liters) of water per cycle.*
- ❑ Operate the dishwasher only when completely full. *Dishwashers use as much as 25 gallons (95 liters) per cycle. A full dishwasher is more water efficient than washing the same load by hand.*

❑ 7. Use California native or Mediterranean garden plants, mulch, and water wisely.

Visit www.lacoastalgardens.com for virtual tours of sustainable gardens in LA, plant lists with photos, and local resources.

- ❑ Landscaping with drought tolerant and/or native plants has many advantages, including:
 - Minimal water use: Plants that are native to California and Mediterranean climates will continue to thrive during droughts
 - Require no fertilizers since the plants are adapted to the natural soil conditions (be sure to identify your soil type prior to choosing plants)
 - If your soil and plants are healthy, your plants will be more resistant to natural pests and disease.
 - Native plants will provide suitable habitat for wildlife like birds and bees:
Compare a traditional lawn with a native garden at garden\garden, 1718 and 1724 Pearl St., Santa Monica, CA 90405.
- ❑ Sign up for sustainable landscaping classes offered by the City of Santa Monica: www.sustainablesm.org/landscape or find on-line training at www.bewaterwise.com/training01.html.
- ❑ Minimize your lawn and its need. The best substitute for a lawn is a native garden. A typical suburban lawn may need up to 22,000 gallons of water annually over and above rainfall. In addition, lawns require polluting fertilizers, polluting gas-powered maintenance equipment, limited water storing capabilities, and do not provide habitat for native wildlife.
 - If you need a lawn, choose a warm season variety like Carex (native grass) or Buffalo grass “UC Verde”. These grasses are lush, beautiful and require very little care since they are adapted for our climate. For a more detailed list of warm-season grasses, visit www.sustainablesm.org/landscape.
 - Water in the early morning (before 5 a.m. if possible) to reduce evaporation and to prevent water from sitting on the plants, which welcomes pests, causes disease and in turn creates the need for chemicals. Watering restrictions are in place throughout Southern California. Find out at www.bewaterwise.com or call your local city or water supplier.
 - Adjust the sprinklers water spray pattern to reduce the amount of water that comes out of each sprinkler thereby eliminating overspray and runoff.

- Install rotary nozzles for your sprinklers. These nozzles can save up to 30% on your outdoor water use.
- Run cycle and soak schedule on your automatic sprinkler system. To find out how much water your plants need, visit www.lacoastalgardens.com.
- Use these sources for native plant species and other climate-appropriate landscaping ideas (See *Support Tools for additional native plant organizations*):
 - www.lacoastalgardens.com
 - Theodore Payne Foundation www.theodorepayne.org
 - Surfrider Foundation Ocean Friendly Gardens <http://www.surfrider.org/ofg.asp>
- Use mulch. Two to four inches of organic mulch, such as finely shredded bark, shredded leaves or gravel, will slow evaporation of moisture in the plants' root area. Mulch also shades and cools the soil, in addition to slowing water runoff and suppressing weeds. It enriches plants, building healthy soil as it slowly decomposes.³⁸ Mulch is the top dressing over the soil and should not be confused with compost which is a soil amendment that's incorporated into your soil before you plant.
 - For local organic mulch visit www.lacoastalgardens.com
 - For compost bins: Santa Monica residents call (310) 458-8546; Los Angeles residents: www.san.lacity.org/srpcd/mulch_compost.htm.
- Install drip irrigation or high efficiency nozzles on your sprinklers (i.e. rotary nozzles) with pressure regulating devices www.sustainableism.org/landscape and adjust to make sure that you're only using as much water as your plants truly need. Traditional sprinklers often over-water plants and grasses. Converting sprinklers to drip around your shrubs can save up to 80% on your water use.
- Harvest rainwater. Check your City's rebate programs (Santa Monica residents call (310) 458-8972) and see the Support Tools for rain barrel and rain chain sources.
 - Use a rain barrel to capture rain from your roof, storing it for use in irrigating your plants.
 - Build a dry creek and/or permeable surfaces to capture rain water for irrigating your garden and preventing urban runoff.
 - Use a rain chain to divert rainwater from your roof into a permeable stream bed or shrub bed.
 - Divert your gutter to the landscape. Accordion style diverters can be found at local hardware stores.

□ 8. Reduce your contribution to urban runoff and water pollution.

Urban runoff is a serious concern, in both dry and rainy seasons. It can be contaminated with pesticides, fertilizer, animal droppings, trash, food wastes, automotive by-products and other toxic substances that are part of our urban environment. Waters that flow over streets, parking lots, construction sites and industrial facilities carry these pollutants through a storm drain network or open creeks and eventually drain (usually untreated) into the beaches where you swim. Storm water/urban runoff is considered the number one source of pollution to Santa Monica Bay.³⁹ The water that drains from your toilets, showers, faucets, clothes washers, goes down the sewer pipe to a wastewater treatment facility where it is treated then dumped into the ocean.

- Avoid dumping any hazardous materials down the storm drain, street, alley or indoor or outdoor drains. Every time you pour hazardous cleaners, medications, paint and other chemical products down the drain or toilet, you're making it harder for your local wastewater treatment plants to do their job. Treatment plants are only designed to treat sewage, not harmful chemical products. The chemicals added to your wastewater will reduce the potential of the treatment system in keeping pollutants out of our waterways, while increasing the costs of treating the water. See the Support Tools in the Chemical chapter for inexpensive and effective recipes for eco-friendly household cleaning products.
- Create permeable surfaces to capture storm water. For ideas, visit www.sustainableism.org/runoff or the Surfrider Foundation's Ocean Friendly Gardens website at www.surfrider.org/ofg.asp.
- Keep your car free from leaks. Dripping transmission fluid, oil and other automotive liquids will always end up in the bay.
- Wash your car with one of the effective new *Waterless* Car Wash products, they work extremely well and actually reduce the amount of scratches caused from the minerals in the water.
 - EcoTouch - www.ecotouch.net
 - Freedom - www.freedomwaterlesscarwash.com

- Lucky Earth - www.luckyearth.com
- NoWET - www.nowet.com/carwash.htm

☐ 9. Consider installing a graywater system.

Graywater is wastewater collected from clothes washers, bathtubs, showers, and laundry or bathroom sinks. The water is collected, filtered and redirected for secondary use such as flushing toilets, for outdoor watering. Graywater systems help keep excess water out of the watershed as well as save you money on your water bill (reusing gray water can reduce your water costs by more than 30%). A typical home with four people can save ~30,000 gallons per year using a graywater system.

- ☐ Speak to your local Building and Safety Department about rules and regulations concerning graywater systems. Graywater systems are neither appropriate nor legal in all areas. Santa Monica's Graywater Guidelines can be found at www.sustainablesm.org/landscape.
- ☐ Visit Eco Home (visit *the Support Tools for contact information*) and see a gray water system in action.
- ☐ Other gray water resources include the Oasis Design at www.oasisdesign.net or (805) 967-9956, Ecowaters Project at www.ecowaters.org (978) 318-7033, , and Rocky Mountain Institute at www.rmi.org or (970) 927-3851.

☐ 10. Get active

- ☐ Volunteer
 - Food and Water Watch
 - Heal the Bay
 - Santa Monica Baykeeper
 - Sierra Club Los Angeles Chapter Water Committee
 - Surfrider Foundation
- ☐ Write a letter
 - Coastal Protection
 - Ballona wetlands/wetland conservation
 - Visit Environment California's web site for current water issues (www.environmentcalifornia.org)
- ☐ Participate in the following thematic events:
 - California Coastal Clean-up Day – Third Saturday of September
www.coastal.ca.gov/publiced/ccd/ccd.html
 - International Day of Action for Rivers – Month of March www.irn.org/dayofaction

What Others Are Doing

Local Case Study

SMURRF

Santa Monica Urban Runoff Recycling Facility

Santa Monica, CA

What is SMURRF?

SMURRF is a state-of-the-art, first-of-its-kind urban surface water (runoff) treatment and recycling plant.

What does SMURRF do?

It cleans water that normally flows over city streets and lawns into underground storm water pipes and into the ocean, carrying with it litter, decaying leaves, oil, bacteria and pesticides....the urban pollution that is generated from everyday living and illegal disposal of wastes. This water flow is called urban runoff and can include storm water during wet weather.

How much urban runoff does SMURRF treat?

This facility treats up to 500,000 gallons of runoff per day. This equals around 4% of the city's daily water usage. The water comes from main storm drains that serve Santa Monica - the Pico-Kenter and Pier storm drains.

What happens to the treated water?

It is reused for landscape irrigation at city parks and cemeteries, and along the Santa Monica Freeway, and for indoor toilet flushing in buildings that have a second set of pipes installed especially for recycled water.

How does reusing treated water help the environment?

When it rains or when people hose down paved surfaces like sidewalks and streets, or over water landscaping, water flows across driveways, yards, parking, sidewalks and streets. Have you ever looked at what accumulates on these paved surfaces? Litter, oil and grease, pet droppings, cigarette butts, leaves and soil. Do you know that what accumulates on these surfaces is microscopic? Urban runoff and storm water pick up these pollutants and wash them into the ocean. People have gotten sick from swimming near the flowing storm drains. The number one single source of pollution to the Santa Monica Bay is urban runoff.

What is the difference between dirty water leaving my house and the dirty urban runoff flowing down streets?

The main difference is that while dirty water from showers, toilets, sinks, washing machines and other plumbing in your house is destined for the sewer system and always fully treated to neutralize, remove or reduce pollutants before the water is recycled or released into the environment, urban runoff usually receives no treatment. It goes from street to catch basin to storm drain and then dumped untreated into the ocean, often leaving our beaches looking like landfills. Fortunately, the SMURRF treats urban runoff to remove pollutants, kill microorganisms and release a source of clean water for reuse.

Visit the Support Tools to see where your water flows.

Congratulate Yourself and Plan for the Future

What did you do? Did you...

- 1. Find and fix leaks
- 2. Install water-saving devices
- 3. Eat less beef and other water consuming foods
- 4. Change your behavior
- 5. Buy water saving appliances
- 6. Increase the efficiency of your appliances
- 7. In the garden: use mulch, plant water-saving plants, water wisely.
- 8. Reduce your contribution to urban runoff and water pollution
- 9. Consider installing a graywater system
- 10. Get Active

What else are you going to do?

- 1. Find and fix leaks
- 2. Install water-saving w devices
- 3. Eat less beef, and other water consuming foods
- 4. Change your behavior
- 5. Buy water saving appliances
- 6. Increase the efficiency of your appliances
- 7. In the garden: use mulch, plant water-saving plants, water wisely.
- 8. Reduce your contribution to urban runoff and water pollution
- 9. Consider installing a graywater system
- 10. Get Active

Reflecting on your

On your Sustainability the “After SW” and possible before reflections.

SustainableWorks



Water Usage

Survey, fill in as much of “Difference” section as completing these

Describe how your daily actions impact water issues.

What is the most learned about water and your personal

important thing you use, your watershed health?

What would you like to regarding water (ask

learn more about during your meeting)?

Of the water recommendations you selected, which is the most significant to you and why?

What would you be most likely to teach others about water use?

What would you like to share at the meeting about your water usage (look at your SS)?

Support Tools

for
Water

Water – Agencies, Books, and Websites

Websites

<http://aquaforina.com/contact-aquaforina>

Aquaforina Water Education Foundation

Aquaforina is dedicated to providing comprehensive news and information about California water issues, as well as issues affecting the southwest. This regularly updated blog posts links from the news media, press releases, trade magazines, and other blogs.

www.bewaterwise.com

www.bewaterwise.com/ww_landscaping.html

A program of the Metropolitan Water District of Southern California and The Family of Southern California Water Agencies.

For an online or in-person landscaping course: <http://www.bewaterwise.com/training01.html>

<http://www.cyber-rain.com/>

Cyber-rain is a ground-breaking smart sprinkler control system that gives homeowners an easy way to save 30-70 percent on their landscape watering bills by using the ease and convenience of the personal computer and automatic weather updates from the internet.

<http://www.epa.gov/watersense/>

WaterSense, a partnership program sponsored by the Environmental Protection Agency, identifies appliances that are water efficient.

www.h2ouse.org/*

This website was developed by the California Urban Water Conservation Council under a cooperative agreement with the U.S. Environmental Protection Agency. The Council is a consensus-based partnership of over 285 urban water suppliers, public advocacy organizations, and other interested parties concerned with water supply and conservation of natural resources in California.

www.healthebay.org*

Local nonprofit organization committed to the protection and conservation of Santa Monica Bay and Southern California's Coastal waters and their ecosystems.

<http://www.irrigationtutorials.com/dripguide.htm>

Your go-to source for any irrigation-related questions, including drip irrigation systems.

www.lawncareguide.org

Provides practical lawn care needs, including a list of warm season grasses ideal for drought-prone climates and information on electrical lawn-care equipment.

www.rainbud.com

Rain Bud – a local source for recycled plastic rain barrels.

(310) 954-1318

info@rainbud.com

www.rainchainsdirect.com

Rain Chains Direct

(310) 772-8282

info@rainchainsdirect.com

www.rmi.org*

Rocky Mountain Institute is an entrepreneurial, nonprofit organization that fosters the efficient and restorative use of resources to create a more secure, prosperous, and life-sustaining world.

www.sustainablesm.org

City of Santa Monica's Office of Sustainability and the Environment webpage. Includes Santa Monica Beach Report, The Latest Studies of the Bay, and What's Happening to Clean-up the Bay?

www.smbaykeeper.org*

The Santa Monica Baykeeper is your citizen "park ranger" for the Santa Monica Bay, San Pedro Bay, and the adjacent coastal waters and watersheds. The primary mission is to continually survey the environmental health of these resources; to alert the public to potential hazards and expose those who contribute in any way to the degradation of this ecosystem.

www.sustainablesm.org/gardengarden

The City of Santa Monica's garden\garden demonstration landscapes are located at 1718 and 1724 Pearl Street, and provide a comparison of a traditional lawn to a native garden.

www.surfrider.org/ofg.asp

In partnership with the West Basin Municipal Water District, the Surfrider Foundation's Ocean Friendly Gardens provides valuable resources for creating gardens that minimize the need for water, fertilizers, pesticides, fossil-fuel equipment, and which help prevent urban runoff.

www.irrigation.org/SWAT/Industry/

List of weather-based or soil moisture sensor irrigation controllers that help take the guess work out of watering your garden.

www.waterwiser.org

American Water Works Association

Your premier water efficiency and water conservation information resource. For years now, WaterWiser has been faithfully serving the growing community of water conservation and efficiency practitioners and advocates by continually developing new services that will meet customers' needs.

***See the Agency or Organization sections for additional contact information.**

Agencies

California Coastal Commission

45 Fremont St.

San Francisco, CA. 94105

(800) 262-7848

www.coastal.ca.gov/

Works to protect and enhance various resources along the California Coast.

California Urban Water Conservation Council

455 Capitol Mall #703

Sacramento, CA. 95814

(916) 552-5885

www.cuwcc.org/

Their goal is to increase the efficiency of water use throughout all of California, among residents, businesses and other water agencies.

City of Santa Monica

Watershed Management Section

200 Santa Monica Pier, Suite K

Santa Monica, CA 90401

(310) 458--8972

www.sustainablesm.org

Los Angeles Department of Water and Power

1394 South Sepulveda Blvd.
West L.A., CA. 90069
(800) 342-5397
www.ladwp.com

Provides the Los Angeles area with electric and water services. DWP also offers conservation and efficiency solutions through their products and services.

Metropolitan Water District
P.O. Box 54153
Los Angeles, CA. 90054
(213) 217-6000
www.mwdh2o.com

Delivers drinking water to L.A., San Diego, Orange County, San Bernardino, Riverside, and Ventura counties.

Southern California Watershed Council
111 N. Hope Street Suite 627
Los Angeles, CA. 90012
(213) 367-4111
<http://lasgrwc.org/>

This site is full of FAQ's, maps, news, inquiries and regional info on watersheds.

Organizations

Alliance for Water Efficiency
P.O. Box 804127
Chicago, IL 60680
(773) 360-5100
<http://www.allianceforwaterefficiency.org/>

American Water Works Association
Water Wiser
6666 West Quincy Avenue
Denver, CO 80235
(800) 926-7337
www.waterwiser.org

Aquarium of the Pacific
100 Aquarium Way
Long Beach, CA. 90802
(562) 590-3100
www.aquariumofthepacific.org

This aquarium is home to more than 12,000 different animals that are natives to the waters of Southern California to Baja, as well as the North and Tropical Pacific oceans.

Cabrillo Marine Aquarium
3720 Stephan White Drive
San Pedro, CA. 90731
(310) 548-7562
www.cabrilloaq.org

A research facility that provides the public with an education of conserving marine life in Southern California.

Eco Home Network
4344 Russell Ave.
Los Angeles, CA. 90027

(323) 662-5207

www.ecohome.org

Promotes sustainable and ecological developments in our environment.

Friends of Ballona Wetlands

318 B Culver Blvd.

Playa Del Rey, 90293

(310) 306-5994

www.ballonafriends.org

Commits their services to preserving and restoring wetlands that are homes to many birds, fish and other wildlife.

Friends of the Los Angeles River

570 W. Avenue 26 #250

Los Angeles, CA. 90065

(323) 223-0585

www.folar.org

They work towards restoring the L.A. River to its natural surroundings and wildlife, creating a healthy ecosystem and flood protection. They are also aiming to make the river available for recreational use for the public.

Green Map

(310) 399-4944

www.lagreenmap.org

"Maps that locate and promote sustainable urban features, natural and manmade."

Heal the Bay

3220 Nebraska Avenue

Santa Monica, CA 90404

(310) 453-0395

(800) HEAL BAY (in California only)

www.healthebay.org

Hyperion Sewage Treatment Plant

www.ci.la.ca.us/SAN/htp-gallery.htm

A wastewater treatment plant located in El Segundo.

California Native Plant Society

1722 J Street Suite 17

Sacramento, CA. 95814

(916) 447-2677

www.cnps.org

Their organization helps to educate the public on how to increase preservation for California's Native plants in their own natural habitats.

Rocky Mountain Institute

1739 Snowmass Creek Road

Snowmass, CO 81654-9199

(970) 927-3851

www.rmi.org

Santa Monica Baykeeper

P.O. Box 10096

Marina Del Rey, CA. 90295

(310) 305-9645

www.smbaykeeper.org

Oversees SM Bay, San Pedro Bay and adjacent coastal waters and nearby watersheds. Works to inform the public of any potential hazards and alert them of those in the community who are a negative influence on our eco-system.

SMURRF

(310) 458-8223

www01.smgov.net/epwm/smurrf/smurrf.html

Treats urban runoff water to remove pollutants that are gathered from ground surfaces, and then recycles it for landscape irrigation and some plumbing systems.

Surfrider Foundation

Ocean Friendly Gardens Program

(In partnership with the West Basin Municipal Water District)

<http://surfriderwlam.org/programs/ocean-friendly-gardens/>

Theodore Payne Foundation

10459 Tuxford St.

Sun Valley, CA. 91352

(818) 768-1802 Hotline (818) 768-3533

www.theodorepayne.org

The foundation has a year round Native Plant nursery with educational programs to outreach the community.

Tree People

12601 Mulholland Dr.

Beverly Hills, CA. 90210

(818) 753-4600

www.treepeople.org

Dedicates their work to educating the public on how to care for our environment by planting and preserving trees and conserving water and energy.

Water Conservation Hotline

800 544-4498

Water Education Foundation

717 K Street Suite 317

Sacramento, CA. 95817

(916) 444-6240

www.water-ed.org

Helps to address and resolve water issues and problems through their educational program.

Wetlands Recovery Project

645 S. Citrus Ave.

Los Angeles, CA. 90036

(323) 938-5530

www.scwrp.org

A group of public agencies that work together to help restore and develop a better environment for the coastal wetlands from Point Conception to the International Border of Mexico.

Books

[A River No More](#) by Philip L. Fradkin. This is a definitive history of the development of the Colorado River and the claims made upon it from its source in the Wyoming Rockies to the Gulf of California, where it evaporates in the sand.

[Cadillac Desert](#) by Marc Reisner. A well renowned book that tells the story of the American West's water resources. It gives a history of human efforts in discovering and controlling water, covering everything from

damming rivers, water diversion, political corruption, battles over water rights and economic and ecological disasters.

[The Control of Nature](#) by John McPhee

In this Book, McPhee looks at examples of the never-ending human versus nature phenomenon. The first section looks at an attempt, made by the Army Corps of Engineers, to keep the Mississippi River from changing course. Part two describes efforts to prevent debris flows in Southern California. The third section takes readers to Iceland, where Icelanders fight a lava flow with sea water to keep it from closing off the mouth of its most productive harbor. Indirectly, each of these episodes shows how water affects human life.

[Food Not Lawns](#) by Heather Flores. Combines practical wisdom on ecological design and community-building with a fresh, green perspective on an age-old subject. Activist and urban gardener Heather Flores shares her nine-step permaculture design to help farmsteaders and city dwellers alike build fertile soil, promote biodiversity, and increase natural habitat in their own "paradise gardens."

[Food Revolution](#) by John Robbins. Exposes the dangers behind many of today's foods and reveals the extraordinary benefits of healthy alternatives. The Food Revolution will show you how to extend your life, increase your vibrancy and vitality, and take a stand for a more compassionate and sustainable world.

[Gila: The Life and Death of an American River](#) by Gregory McNamee. Follows the ecologic history of the Gila River from its source in New Mexico, through its confluence with the Colorado River and into Arizona. Today, half of the Gila is dead, due to overgrazing, damming, and other practices.

[Last Oasis: Facing Water Scarcity](#) by Sandra Postel. The worldwide water crisis, according to this book, is due to its ready availability, low cost, people's overuse, and lack of respect for this life-sustaining resource. Solutions are giving for restoring and sustaining this essential lifeline.

[Salt Dreams](#) by William deBuys and Joan Myers. Written by a historian, this book offers a record of the diversion of the Colorado River and the demise of the Salton Sea. Accompanied by moving photographs.

"Water Efficiency for Your Home"

Available for \$1.00 plus shipping from the Rocky Mountain Institute.

(970) 927-3851.

Documentaries

[Blue Gold: World Water Wars](#) - "In every corner of the globe, we are polluting, diverting, pumping, and wasting our limited supply of fresh water at an expedient level as population and technology grows. The rampant overdevelopment of agriculture, housing and industry increase the demands for fresh water well beyond the finite supply, resulting in the desertification of the earth." A great primer on world wide water issues.

[Flow](#) - Interviews with scientists and activists intelligently reveal the rapidly building crisis, at both the global and human scale, and the film introduces many of the governmental and corporate culprits behind the water grab, while begging the question "CAN ANYONE REALLY OWN WATER?"

INSTALLING A FAUCET AERATOR



The easiest way to save water is to install aerators on your faucets. This simple act can cut your water use in half! Older faucets use between 3 and 7 gallons per minute. Low-flow faucet aerators use 1.5 gallons of water per minute and ultra low-flow models can use as little as .5 gallons per minute.

Aerators can be easily screwed into your existing faucets. Most modern kitchen and bathroom faucets have standard size outlets with threads inside the outlet for screwing in an aerator. If an aerator is in place, it will have writing on its side telling what its rated flow is in GPM (gallons per minute). A faucet is considered to be "low-flow" if it's rated at 2.5 gallons per minute or lower. If your faucet has no aerator, or its aerator is rated at more than 2.5 GPM, replace it with a low-flow or ultra low-flow version.

How to install an aerator:

Replacing a faucet aerator is a simple job. You must first unscrew the old aerator. Many of these can be removed using your bare hands, but more stubborn aerators will need a wrench or pliers.

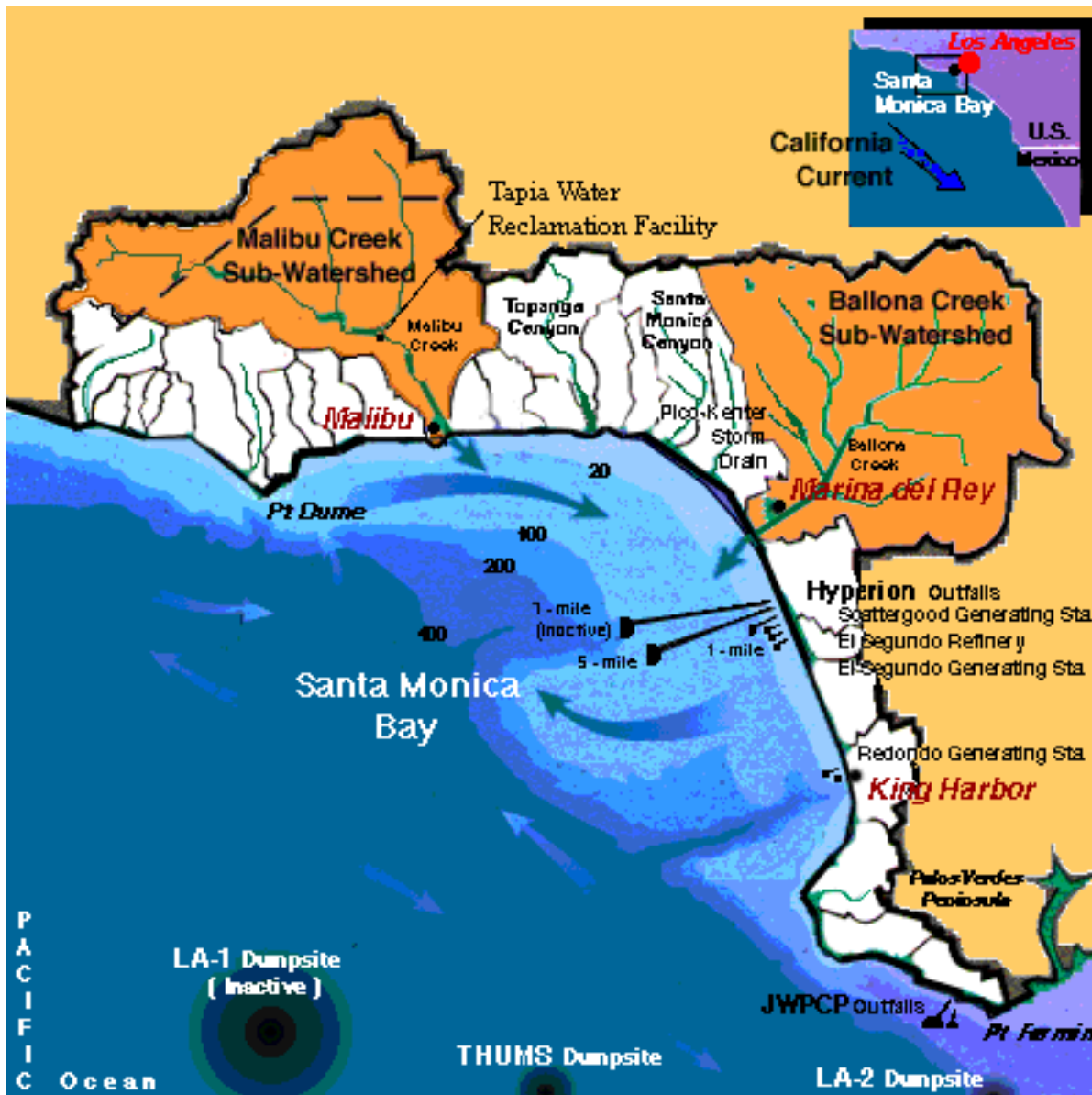
Apply some pipe joint compound or pipe tape around the screw threads of the new aerator, and tighten by hand. Run water through the faucet to make sure it has no leaks. If necessary, lightly tighten it with a wrench. Installing a kitchen faucet aerator can sometimes cause the faucet arm to leak where it connects to its base, so you may also need to tighten up this connection with a wrench. If your new aerator sprays out the side, unscrew it and screw it on again.

Here's Where Your Residential Water Goes⁴⁰

U.S. indoor residential water use is estimated to average 80 gallons per person per day in homes without efficient fixtures. Outdoor use varies tremendously: your use could be insignificant or, if you have a large lawn which requires watering, it could be more than 200 gallons per person per day. To be certain, compare your winter and summer water bills.

- Toilets (28%)
- Washing Machine (22%)
- Showers (21%)
- Faucets (12%)
- Baths (9%)
- Dishwasher (3%)
- Toilet Leaks (5%)

Santa Monica Watershed



(Santa Monica Bay Restoration Commission)

Simply put, the Santa Monica Watershed is our drainage basin. The Santa Monica Watershed is defined by the Santa Monica Mountains and the adjacent mountains surrounding the Los Angeles Basin. Water drains from these semi-wilderness areas, to the canyon river areas and coastal wetlands, and then to the Santa Monica Bay.

Our watershed does not meet all the water needs of our community. Santa Monica alone imports 80% of its drinking water from the Colorado River and the Sacramento-San Joaquin Delta of Northern California. Importing water costs you money, as does properly disposing of treated water and trying to manage polluted urban runoff.

Water Facts

Santa Monica⁴¹	
Water Supply Sources (Average Year)	
<p style="text-align: center;">Metropolitan Water District</p> <p>Metropolitan imports its water from two sources—the Colorado River and the State Water Project. The SWP brings supplies south from the Sacramento-San Joaquin Delta, while the Colorado River Aqueduct moves water from the east. The CRA stretches 242 miles across the desert and mountains; the SWP courses 444 miles through the central part of the state topping the Tehachapi Mountains and flowing into the Southern California coastal plain.</p>	86%
<p style="text-align: center;">Groundwater</p> <p>Contaminated by MTBE. ~70% before the MTBE contamination. Treatment Facility will not open until approximately 2011.</p>	12%
<p style="text-align: center;">Recycled</p> <p>Recycled by SMURRF. It receives urban runoff throughout the year even in the summer.</p>	2%
<p>Water Usage: City Wide 12,500,000 Gallons per Day The average use per capita is 144 gallons per person per day.</p>	

Los Angeles⁴²	
Water Supply Sources (Average Year)	
<p style="text-align: center;">Los Angeles Aqueduct</p> <p>This system delivers water from the Owens River in the Eastern Sierra Nevada Mountains into the city of Los Angeles</p>	35%
<p style="text-align: center;">Metropolitan Water District</p> <p>Metropolitan imports its water from two sources—the Colorado River and the State Water Project. The SWP brings supplies south from the Sacramento-San Joaquin Delta, while the Colorado River Aqueduct moves water from the east. The CRA stretches 242 miles across the desert and mountains; the SWP courses 444 miles through the central part of the state topping the Tehachapi Mountains and flowing into the Southern California coastal plain.</p>	53%
<p style="text-align: center;">Groundwater</p> <p>The LADWP has water rights in four separate local groundwater basins: San Fernando, Sylmar, Central, and West Coast. The San Fernando Groundwater Basin is the largest of these resources, accounting for nearly 80 percent of all local groundwater pumped by LADWP.</p>	11%
<p style="text-align: center;">Recycled</p> <p>The Los Angeles Department of Water and Power has recycled water projects operating in many areas of the City and others that are in various stages of planning, design, or construction. Often, customers can achieve a water rate savings up to 40 percent by switching from potable to recycled water.</p>	1%
<p>Water Usage: Los Angeles customers purchased about 199 billion gallons during fiscal year 2007-2008. The average use per capita is 144 gallons per person per day.</p>	
Residential	432,594 acre-feet or 433,000 football fields covered with one foot of water
Commercial/ Industrial	133,348 acre-feet or 134,000 football fields covered with one foot of water
Government	44,803 acre-feet or 45,000 football fields covered with one foot of water
<p>First and Second Los Angeles Aqueducts: Water flows by gravity 338 miles from Mono Basin and 233 miles from the Owens Valley to Los Angeles.</p>	
Total Water Storage	100 tanks and reservoirs
Distribution System	7,229 miles of pipe

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- ¹⁰ Keith Bradsher, "As Australia dries, a global shortage of rice," *NY Times*, 17 April 2008.
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