

Homeowner's GUIDE

To Household Water Conservation

XCM-219

Colorado's semi-arid climate is frequently punctuated with droughts, reminding us of the value of plentiful water supplies. Fortunately, most of the water supply for Colorado's urban dwellers is renewed annually as snowpack in the Rocky Mountains. However, as Colorado's population grows, competition for the supply will grow as well, forcing municipalities to develop other water supplies by buying water from farms, building new projects or using groundwater. The results of these water transfers to urban use are permanent and come at a cost to rural communities and the environment. Water conservation in your home can help slow this process and provide your household considerable savings on your monthly water bill.

Water supply planners estimate that a typical household needs about half an acre-foot of water per year (approximately 150,000 gal) to satisfy the demands of a residential home and lawn. However, we can get by on less by reducing our water consumption in and around the home. Outdoor water use accounts for almost half of the residential water use in urban areas along the Front Range, most of which is used on turf. A 2007 report by the Western

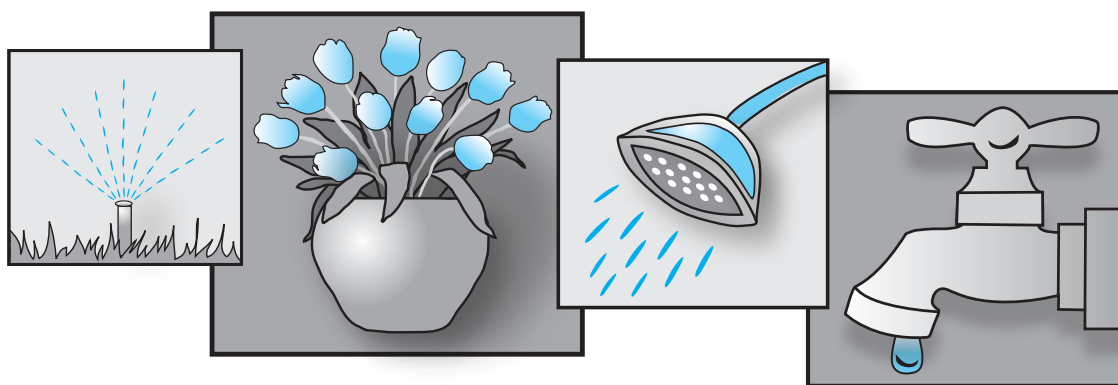
Resource Advocates estimates Colorado single family residential use between 96 and 143 gallons per capita per day (gpcd). This compares to estimated water use in Albuquerque, New Mexico at 110 gpcd, Tucson, Arizona at 114 gpcd and Las Vegas Valley, Nevada at 174 gpcd from another study.

Water Conservation in the Home

Home water use varies considerably, depending upon the number of people in a household, plumbing fixtures, appliances, and other factors. The largest water users in the home are toilets, clothes washers, faucets, and showers. Consider the following actions for savings in these areas:

Bathroom Water and Shower Savings

- Turn off the water when brushing teeth and save 25 gallons per month.
- Turn off the water when shaving and save up to 300 gallons per month.
- Install low-flow faucet aerators on all your household faucets. Some aerators can restrict flow to less than 1.0 gpm.



- Check and repair faucet leaks and save up to 140 gallons of water per week.
- Install a low-flow showerhead if you do not already have one.
- Keep your showers brief. A shower that lasts for five minutes using a low-flow showerhead uses 12 gallons of water. If possible, use a kitchen timer to help control the time you are in the shower.
- Turn off the water while you lather up with soap and shampoo.
- Check and repair leaks from all shower and tub valves.

Toilet Efficiency

Toilets made before 1993 use 3.5 to 8 gallons per flush (gpf). High efficiency toilets manufactured after 1993 use 1.6 gpf. Newer high efficiency toilets use 1.28 gpf and dual flush toilets use even less. The date of manufacture of most toilets is printed on the underside of the tank lid. A family of four can save 14,000 to 25,000 gal per year by switching from conventional toilets to the newer, more efficient ones. Your water utility may even offer rebates for replacing conventional toilets. Additional water savings can occur by making sure your toilet is not leaking and

that the flapper is working properly. Here are other suggestions for increasing your toilet-use efficiency.

- Install dual flush or low-volume toilets.
- Consider not flushing the toilet unless necessary.
- Regularly check for toilet leaks by placing food coloring in your toilet tank. Repairing leaking toilets can save more than 600 gallons of water per month.
- Do not use your toilet as a wastebasket.
- Make sure your toilet flapper does not remain open after flushing.
- Avoid using toilet bowl cleaners such as toilet tank tablets. These products affect the pH of water in your toilet tank, can cause leaks by damaging the rubber and plastic parts of your toilet, and are a water quality concern.

Clothes Washing Efficiency

Conventional washing machines use between 35 to 50 gallons per load (gpl). Front-loading machines are more efficient and use between 18 to 20 gpl. Below are suggestions for reducing water use while washing clothes.

- Run the washing machine only when you have a full load of laundry.
- For lightly soiled laundry loads, use the shortest wash cycle.
- Pre-treat stains on your clothes to reduce the need to rewash items.
- Select the minimum water volume per load if your washer has a variable water volume setting.
- Regularly check washing machine hoses for leaks.

Dishwasher and Kitchen Efficiency

- Install a high efficiency dishwasher machine.
- Running the dishwasher only when it's full can save 1,000 gallons of water per month.

Average Indoor Household Use*			
	Amount per use (gal.)	Uses per day	Total use per household per day (gallons)
Toilets	3.1	12.6	39.5
Clothes Washers	38.7	0.7	25.6
Faucets	1.2	20.6	24.3
Showers	13.1	2.2	29.0
Baths			2.9
Dishwashers	7.9	0.3	2.5
Leaks			24.5
Other/Misc			5.7
Total			154.1
* (Denver Water 2005 End Use Study) 2.5 People per household			

Check the flow rate of your showerhead by using a 5-gallon bucket and a clock. Turn the shower on full and place a 5-gallon bucket under the shower for two minutes. A 2.5 gpm showerhead will fill the bucket up in that two-minute time frame.

- Running a full dishwasher usually uses less water than washing the same number of dishes by hand.
- Do not run the faucet continuously while washing dishes. If you have a double-basin, fill one with soapy water and one with rinse water, or use pans and then pour the leftover water on the lawn or garden.
- Instead of running water from the tap, wash fruits and vegetables, such as leafy greens, in a clean bowl of water, and then rinse under running water or use a salad spinner. Scrub melons in a bowl of water with a clean vegetable brush before rinsing under running water.

- Collect the water you use for rinsing fruits and vegetables, then reuse it to water houseplants. Old pet water can also be used to water indoor or outdoor plants.

Estimated Faucet Leakage Rates

60 drops/minute = 192 gallons/month

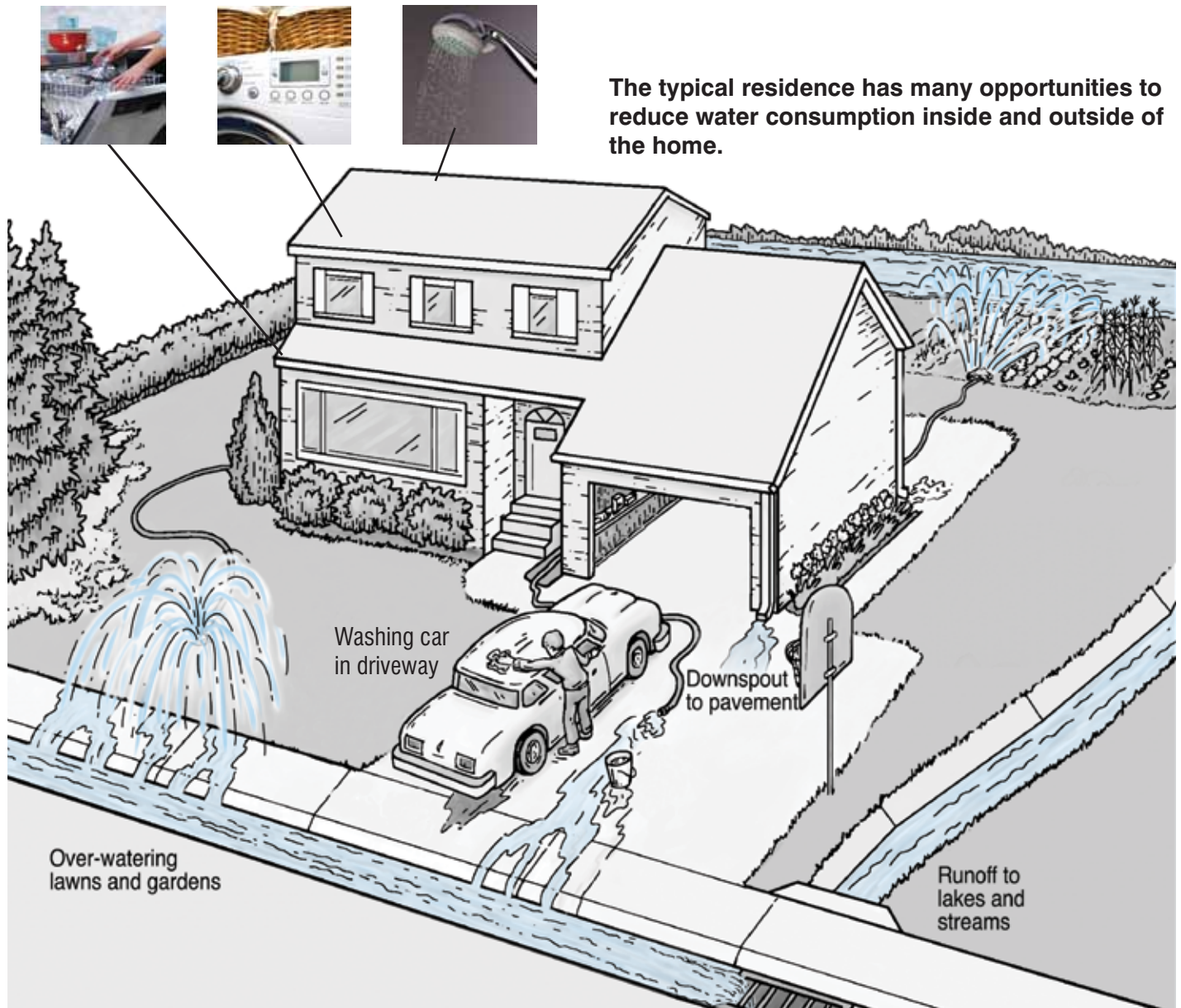
90 drops/minute = 210 gallons/month

120 drops/minute = 429 gallons/month

Water Conservation Outside of the Home

Improving Lawn Irrigation Efficiency

Urban lawn watering is the single largest water demand on most municipal supplies. However, there are many ways to conserve water outside the home. It



is important to avoid overwatering because it is not only wasteful, but unhealthy for plants. Learn the water requirements of your landscape and create an irrigation schedule appropriate for the types of plants you have. In addition, make a habit of manually operating your irrigation system and rely less on the automatic controller. Do not irrigate on a set schedule since daily plant water use can vary greatly according to the weather. Finally, take into account recent rainfall amounts before watering your landscape.

During drought or times of restricted landscape watering, most lawns, including bluegrass, will withstand reduced watering regimes by going dormant. In these situations, adjust mowing, fertilizing, aeration, and weed control practices appropriately to the watering schedule. Most lawns can be revived with good management and care after the drought breaks. Changing landscape plants and lawn grass species during drought is not a good idea, as it generally takes more water to establish new plants than to keep old plants alive.

Keep in mind the variety of water needs among various landscape plants. For example, Kentucky bluegrass can survive on twice a week watering, even during the hot, dry summer. Trees and shrubs may only need water every few weeks, while flowerbeds may need to be watered once a week. Trees, shrubs, and flowers may rot if you water them on the same watering schedule as your lawn.

Contact your local Extension office about lawn watering auditing programs and resources. Auditing programs are designed to measure your irrigation system's output over a period of time so you can schedule your irrigations appropriately.

Additional Ways to Conserve Water For Landscaping

- Choose shrubs and groundcovers instead of turf for hard-to-water areas such as steep slopes and isolated strips.
- Make sure the irrigation system and sprinkler heads are operating properly and replace broken or missing sprinkler heads.
- Adjust sprinkler heads so that water does not reach streets and driveways.

Average Outdoor Household Use (Gallons)*					
				3 days/ wk	2 days/ wk
Type of landscape	Amount per sq. ft.	Sq. ft.	Total season use (Apr. 1 - Sep. 30)	Use per watering	Use per watering
Bluegrass	18	5,000	90,000	1,070	1,610
Xeriscape	9	5,000	45,000	540	800
* (Denver Water 2005 End Use Study) 2.5 People per household					

- Replace spray heads with low pressure MP Rotators.
- Check nozzles for plugging and wear.
- Place straight-sided containers (such as tuna fish cans) around the yard during irrigation and measure water depth so that you know how long it takes to apply 1/4 to 1/2 inch of water.
- Place containers on persistent dry spots to determine if poor sprinkler coverage is the problem.
- Never water if the soil is still wet.
- Install a rain sensor to automatically delay the lawn irrigation system until water is needed.
- Harvest rooftop rainwater if you legally qualify to do so. Recent legislation (Senate Bill 09-080) allows for some landowners to harvest rainwater based on a specific set of criteria. (See fact sheet 6.702, Graywater and Rainwater Harvesting; <http://www.ext.colostate.edu/pubs/natres/06702.html>)

For more information see:

Fact sheet 7.234, Xeriscaping: Retrofit Your Yard – <http://www.ext.colostate.edu/pubs/garden/07234.html>

Fact sheet 7.239, Operating and Maintaining a Home Irrigation System – <http://www.ext.colostate.edu/pubs/garden/07239.html>

Fact sheet 4.722, Irrigation: Inspecting and Correcting Turf Irrigation System Problems – <http://www.ext.colostate.edu/pubs/crops/04722.html>

Guidelines for When to Water

- Irrigate when footprints or mower tracks become visible and/or large areas of the lawn become blue-gray in color.
- Apply irrigation water so runoff and ponding does not occur.
- Adjust water amounts to account for changes in plant water use (evapotranspiration, ET) brought about by weather conditions. Water utilities often provide ET rates in local newspapers or on their website.
- If you are using a sprinkler system that can be repositioned easily, move it around the yard in cycles to let the water thoroughly and evenly soak in.
- Water dry spots instead of the entire lawn.
- Water between 9 p.m. and 9 a.m. to reduce evaporation losses from hot and windy weather conditions.

For more information see:

Fact sheet 7.199, Watering Established Lawns – <http://www.ext.colostate.edu/pubs/garden/07199.html>

Managing the Water Needs of Plants

- Reset automatic controllers according to the seasonal needs of plants. On many controllers, the easiest method is to change the percent watering as the season advances.
- Turn sprinklers off when it rains or install a rain sensor on your irrigation controller so your system won't run when it's raining.
- Determine appropriate water needs for each area of your lawn and yard. Overwatering is worse than not watering enough.
- Inspect controls at least once a month to adjust run times.
- Winter watering will minimize stress to trees, shrubs, flowers, and turf in areas receiving low winter precipitation. Apply water once a month during dry winter periods when the temperature is above 40 degrees and the water will absorb into the soil before the temperature drops to below freezing.

- Drip irrigation installed at the base of transplanted trees will need to be moved outward and emitters added as the tree root system expands.
- Shaded plants use less water than plants in full sun.

Mulching for Water Conservation

Mulching reduces evaporation from the soil surface and can reduce irrigation needs by as much as 50 percent. The following is a list of suggestions for using mulch in the garden.

- The selection and depth of mulch depends on its use and the area to be covered. Consider using organic mulch to help preserve moisture and soil erosion.
- Plastic is not recommended as landscape mulch as it prevents oxygen exchange with the soil.
- Grass clippings can be used as mulch in the vegetable garden. Do not use clippings from lawns treated with herbicides or other pesticides in the past month.

For more information see:

Fact sheet 7.214, Mulches for Home Gardens – <http://www.ext.colostate.edu/pubs/garden/07214.html>

Conserving Water in the Garden

- Plant in blocks instead of rows to create shade for plant root systems and reduce evaporation.
- Group plants with similar water needs together.
- Check the soil for moisture before you water and do not water until the soil has dried out to a depth of at least four inches once plants are established.
- Consider using drip irrigation to reduce evaporation and apply water only where needed.
- Control weeds that compete with vegetables for water.

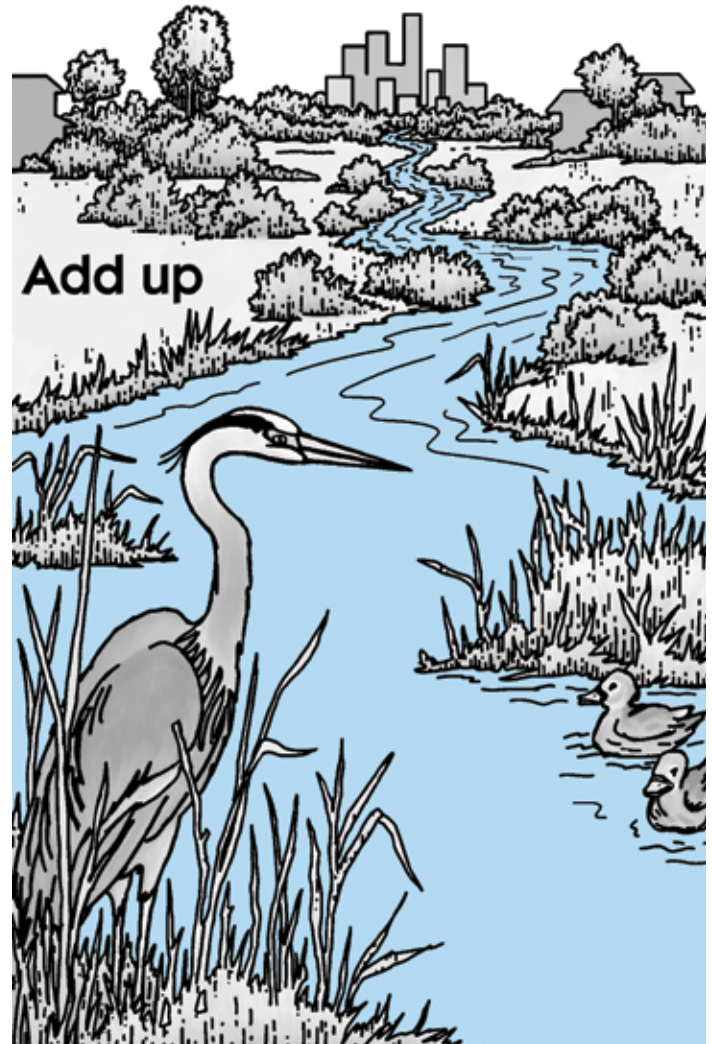
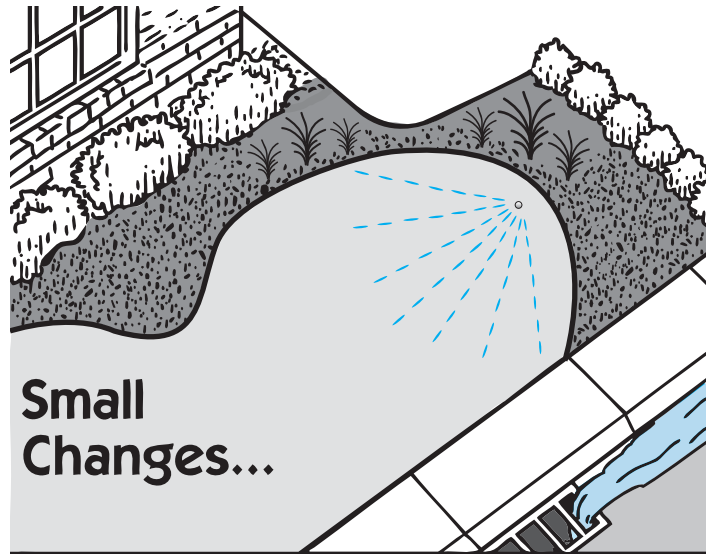
Changing water use habits is easy, saves you money, and offers a way for you and your family to work together on conservation. For more ideas on water conservation, check your local water utility website or ask your local Extension office.

Small Changes Add Up

- Check your water use on the monthly water bill and talk to family members about setting water conservation goals for indoor and outdoor water use.
- Turn off your sprinkler when water needs are low or rainfall has been sufficient to meet your lawns water demands.
- Accept having a slightly dirty car and a less green lawn.
- Use a car wash that recycles water instead of washing your car in the driveway. If that is not possible, wash your car on the lawn so you can simultaneously water your grass.
- Direct downspouts or gutters toward shrubs or trees.
- If remodeling, use porous materials for patios and walkways to reduce runoff.
- Use a broom instead of a hose to sweep your driveway and you can save between 50 and 80 gallons of water.
- When buying a new appliance, look for models that are more water and energy-efficient.
- Take advantage of local water utility incentives or in-home water audits programs.
- Insulate your hot water pipes to shorten the wait for hot water.
- Collect warm up water in a bucket for watering indoor plants.
- Keep drinking water in the refrigerator during the summer instead of letting the faucet run until water is cool.

For more information on protecting water quality and quantity please reference the other Homeowner's Guides in this series:

- Pesticide Use Around the Home and Garden (XCM-220)
- Alternative Pest Management for the Lawn and Garden (XCM-221)
- Fertilizing Your Lawn and Garden (XCM-222)
- Protecting Water Quality and the Environment (XCM-223)



This publication was written by R. Waskom, Director, Colorado Water Institute, J. Kallenberger Assistant Regional Water Coordinator, Colorado Water Institute, T. Bauder, Extension Water Quality Specialist, Department of Soil and Crop Sciences, and M. Neibauer, former Research Associate, Colorado Water Institute.