

RESIDENTIAL LEAK DETECTION










Residential Leak Detection

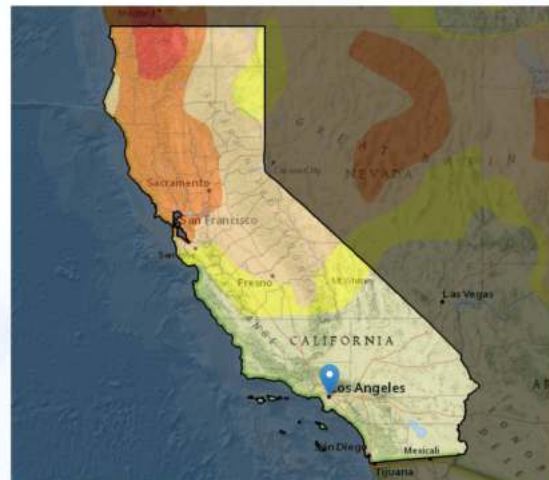


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CA Current Drought Situation

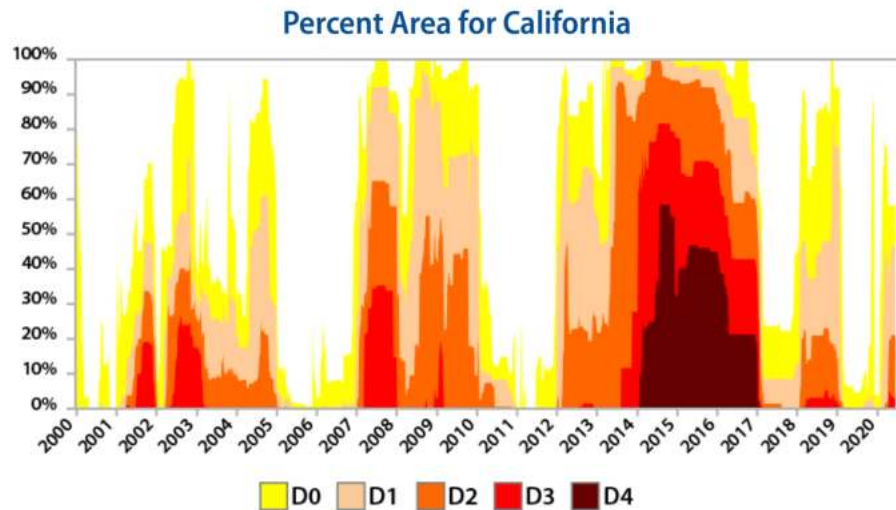
U.S Drought Monitor

	D0 - Abnormally Dry <ul style="list-style-type: none"> Short-term dryness slowing planting, growth of crops Some lingering water deficits Pastures or crops not fully recovered 	11.5% of State	58.2% D0-D4
	D1 - Moderate Drought <ul style="list-style-type: none"> Some damage to crops, pastures Some water shortages developing Voluntary water-use restrictions requested 	25.9% of State	46.7% D1-D4
	D2 - Severe Drought <ul style="list-style-type: none"> Crop or pasture loss likely Water shortages common Water restrictions imposed 	17.8% of State	20.8% D2-D4
	D3 - Extreme Drought <ul style="list-style-type: none"> Major crop/pasture losses Widespread water shortages or restrictions 	3.0% of State	3.0% D3-D4
	D4 - Exceptional Drought <ul style="list-style-type: none"> Exceptional and widespread crop/pasture losses Shortages of water creating water emergencies 		0.0% of State



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CA Current Drought Situation



Current Drought Status

- On average, **75** percent of California's annual statewide precipitation occurs from November through March
- **50** percent occurs from December through February, coinciding with the timing of California's largest winter storms
- At the start of **2020**, the statewide snowpack was **90%** of normal for the time of year. That level dropped to **72%** at the end of January and is now at **64%**
- **Conserve Water!**



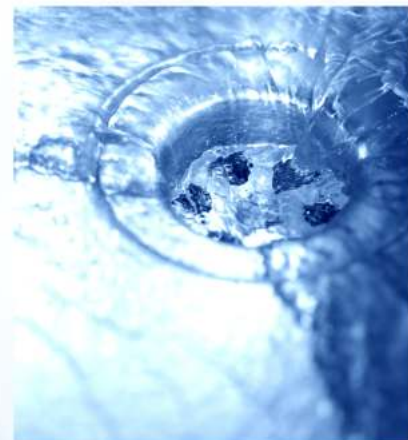
Water Waste Facts: Household Leaks

- Approximately **10%** of American homes leak more than **90** gallons per day.
- That's almost as much as the average per capita per day use in Southern California!
- We could potentially save **177** billion gallons by repairing leaks in the home!



Water Waste Facts

- Faucets: **1** drip/second adds up to over **3,000** gallons a year
- Old inefficient toilets can waste up to **13,000** gallons a year
- A running toilet can waste an entire gallon of water in about **30** seconds
- Irrigation leaks just the size of a dime will waste nearly **6,300** gallons a month
- Bathroom sink faucets and accessories that use a maximum of **1.5** gallons per minute can reduce a sink's water flow by **30** percent or more from the standard flow of **2.2** gallons per minute without sacrificing performance.



Common Outdoor Leaks

Hose End Grommets



Common Outdoor Leaks

Hose Spigots and Garden Faucets



Compression Washer



Common Outdoor Leaks

Irrigation Control Valves (AVB)



Brass Anti-Siphon Valve

Common Outdoor Leaks

Low Head Drainage



Necessary Tools and Equipment

Tools for Investigating Around the House



Stopwatch



Quart size measuring cup



Graduated leak-calculating cylinder



Clipboard, notepad

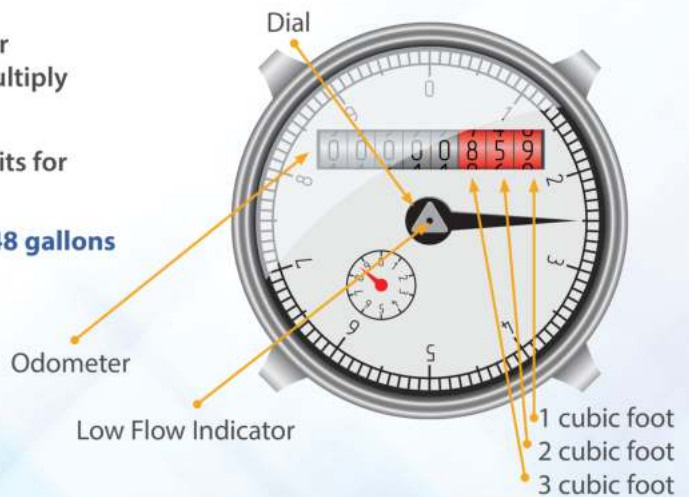


Screwdriver, adjustable wrench

Reading Your Meter

- Water meters measure cubic feet of water used. To convert cubic feet to gallons, multiply the number of cubic feet by **7.48**.
- Water agencies measure water use by units for billing purposes:

1 unit of water billed = 100 cubic feet = 748 gallons



Leak Detection at the Meter

Open meter box; observe leak indicator dial



Isolate Delivery to Indoor Water Use

Isolate water delivery to outdoor irrigation



(It is usually located near the front of the home at the irrigation control valve manifold)

Leak Detection at the Meter

Ensure all indoor water-using devices are off



Leak Detection at the Meter

- Observe leak indicator dial; not spinning, no leak
- If spinning, record meter read; time for two minutes
- Observe meter read at end of two minutes; calculate water loss



61,857.57 cubic feet



61,858.83 cubic feet

Leak Detection at the Meter

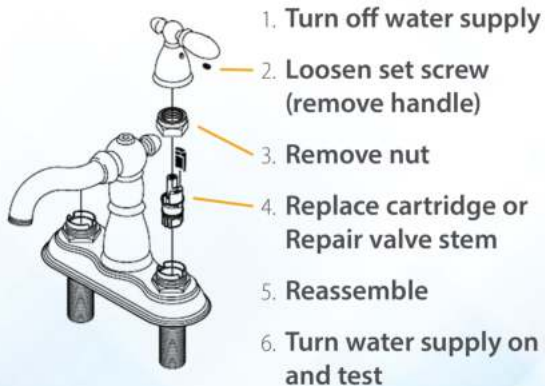
- Initial reading: **61,857.57 cu ft.**
- 2 minutes later: **61,858.83 cu ft.**
- Difference = **1.26 cu ft.**
- Multiply by **7.48 gal/cu ft.**
- Approximately **9.5 gallons** wasted in two minutes!

$$61,858.86 - 61,857.57 = 1.26 \times 7.48 = 9.5$$



Repair Indoor Faucets

Repair a Leaking Faucet



Compression Faucet Valve Stem Assembly



Repair Indoor Water-Using Devices

Faucets

- Inspect the washers and rubber O-rings



Washer O-rings



Repair Indoor Water-Using Devices

Showerheads

- Inspect that the compression washers on the shut-off handles are not worn and are seated properly.
- Remove the showerhead from supply spout; inspect O-ring.
- Wrap Teflon tape around supply spout then reconnect the showerhead.



Teflon Tape

Toilet Tank Leak Test

TOILETS: Toilet Tank Dye Test

- Remove the tank lid
- Add 3 - 5 drops of food coloring
- Wait for 1 - 2 hours
- Observe toilet bowl for dye
- Presence of dye indicates leak from tank to bowl



Food Coloring



Toilet Tank Leak Test: Food Coloring



Food Coloring

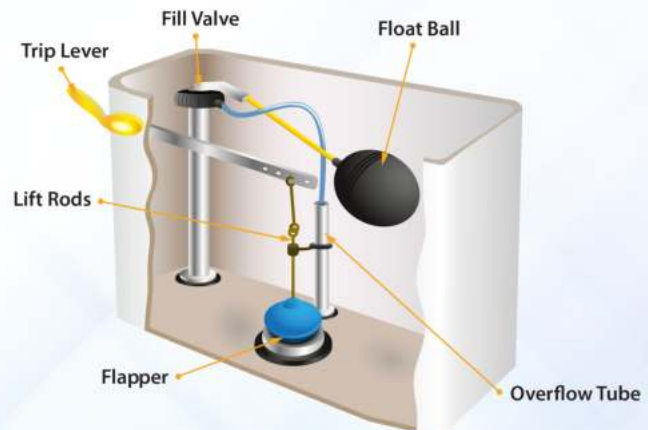


All Clear

Repair Toilet Tank Leaks

TOILETS: Investigating Tank Leak

- Turn off shut-off valve; flush toilet
- Inspect flapper seal and valve seat
- Inspect chain linkage and flush handle
- Inspect float valve; adjust
- If you have a dual flush toilet, there is a separate repair kit.

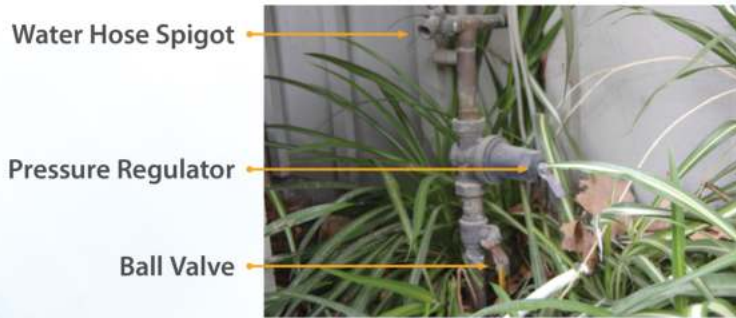


Repair Toilet Tank Leak (Dual Flush)



Isolate Water Delivery to Outdoor Use

Isolate water delivery to indoor plumbing at the isolation valve



(It is usually located near irrigation control valves and the pressure regulator for indoor plumbing)

Outdoor Leak Inspection

Observe irrigation control valves and landscape containing delivery to irrigation control valves for evidence of a leak.



Run-off

Repair Landscape Irrigation Leaks

Sprinklers: Low Head Drainage



In-Line Check Valves



Built-in Check Valves

Repair Landscape Irrigation Leaks

- Irrigation control valves: incessant operation
- Most commonly occur post repairs to mainline
- Shut off supply to manifold
- Open valve bonnet
- Flush out debris with hose or turkey baster
- Wipe debris away from valve diaphragm

Ball Valves



Repair Landscape Irrigation Leaks

Wipe away residue on diaphragm



Remove debris from valve cavity



Repair Landscape Irrigation Leaks

Irrigation Control Valves: spill after shutdown



Valves

Rotor





Thank You
for
ATTENDING!



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