



# OUTDOOR WATER ASSESSMENT GUIDEBOOK



AURORA  
WATER

Your landscape can enhance the beauty of your home while adding significant value. Protect your investment by optimizing your yard's irrigation system so it waters appropriately and efficiently.

Conducting an outdoor water assessment is simple with the right knowledge and tools. Use this guide to assess your irrigation system and increase its efficiency. Performing simple maintenance and regularly adjusting schedules will help reduce water waste while keeping your yard beautiful and healthy.

## 1. IRRIGATION SCHEDULING



**Controllers, also called clocks or timers,** regulate the days of the week and the times that irrigation valves release water to your system.

While controllers turn irrigation on and off, you are the brain of the system. Knowing how to properly schedule your controller can potentially save thousands of gallons per year.

### Irrigation Controller Features

- 1. Stations/Zones** — A group of heads or dripline that are all connected to the same valve.
- 2. Programs** — Programs allow zones to be grouped together based on plant types that need watering at the same frequency. For example, one program might water all grass areas while another waters all trees, shrubs and perennials. All zones on a program will share the same watering days and start times.
- 3. Watering days** — Programs can be set to run on specific days or at certain intervals, such as once every specified number of days.
- 4. Start times** — The start time dictates what time the first zone will run. All zones on that program will then run in sequence until each zone has completed its cycle.
- 5. Run times** — How long each zone's cycle will be determined by the sprinkler head type. For example, rotors can run twice as long as spray heads and yet deliver the same amount of water.
- 6. Seasonal adjustment** — These adjustments reduce all runtimes by a certain percentage in spring and fall. Although this is an easy way to adjust how much water you use, it is much more beneficial to adjust the number of days you water each week throughout the season.

### **Irrigation is used to replace water lost by evapotranspiration (ET).**

Evapotranspiration is water lost from the earth's surface through the combination of water evaporating from the soil and use of water through plants in a process known as transpiration.

## Scheduling Recommendations

According to the city of Aurora's Water Management Plan, customers can water no more than three days per week. In addition, watering cannot occur between the hours of 10 a.m. and 6 p.m. during the irrigation season, which runs from May 1 through September 30. For weekly watering recommendations customized to your area of the city, sign up for our **KNOW YOUR FLOW PROGRAM**. By signing up, you will also receive a monthly report comparing your actual water use to benchmarks customized to the makeup of your home.

**For detailed video instructions on how to operate your particular controller, visit [YouTube.com](https://www.youtube.com) and type in your specific brand and model.** Most major manufacturers post how-to videos to illustrate how to set and adjust their specific controller models.

## Programming Your Controller

- ▶ Set the current date and time by turning the dial to "Date and Time" and using the arrows or the plus and minus buttons to set the year, month, day and time. This step may need to be repeated if a power outage occurs. Next, select "Program A" either by toggling the program switch or turning the dial to "Program Select."
- ▶ Turn the dial to "Start Times" to schedule the time of day you want the system to turn on. Set watering times to begin after 6 p.m. and end before 10 a.m. Be sure to set three separate start times to use the cycle-and-soak technique.
- ▶ Turn the dial to "Run Times" to schedule the number of minutes each zone will be on.
- ▶ Schedule which days to water by turning the dial to "Watering Days" or "Days to Water." Use the arrows or the plus or minus buttons to select no more than three days to water per week. Like runtimes, this will change throughout the season.
- ▶ Repeat these steps for additional programs based on zones with different plant types and watering requirements.
- ▶ To finish, turn the dial to "Run."



## Cycle and Soak

Irrigation systems are meant to supplement a lack of natural precipitation. Ideally, supplemental watering should occur as infrequently as possible but deeply soak the soil to encourage deeper root growth and drought resilience. The cycle-and-soak watering technique helps achieve a deeper soak as well as avoiding runoff due to our region's predominantly clay soil.

To do this, divide each zone's total daily run time into three equal cycles. For example, a 12-minute total runtime would be broken into three four-minute cycles. Schedule the controller for three start times an hour apart for each of the cycles. A good example would be 4 a.m., 5 a.m. and 6 a.m., four minutes each.

## **Smart Controllers**

“Smart” or weather-based irrigation controllers automatically adjust watering schedules based on local weather conditions (ET) and site characteristics. These controllers use Wi-Fi to connect to local weather stations and can be operated via smart phone applications. Smart controllers are truly “smart” when programmed correctly with all the inputs available by that model.

## **Rain Sensors**

These devices help reduce water waste by temporarily shutting off an irrigation system during or immediately after measurable rainfall. City of Aurora code requires these devices on all irrigation systems.

## 2. VISUAL INSPECTION

**A quick visual inspection is the best way to ensure your irrigation system runs efficiently.** To minimize the cumulative effects of normal wear and tear, check your system once per month.

### **Types of Heads**

Different types of irrigation heads deliver water to landscapes in varying patterns and rates. Precipitation rates, which tell how quickly water flows out of the head, are measured in inches per hour. These rates differ depending on the type of head, model and brand.

### **POP-UPS**



- Heads distribute water in a fixed “fan” pattern.
- Best used in smaller areas 4 to 15 feet wide.
- Precipitation rate is 1.5 inches per hour or more, depending on the type of head and system design.

**City Code:** Bodies have check valves and 30 PSI pressure-regulating stems; minimum height of 4”, 6” along curbs.

### **ROTOR HEADS**



- Heads distribute water in a single stream that rotates back and forth.
- Designed for larger areas 16 to 40 feet wide.
- Deliver water at half the rate of pop-ups (around 0.5 inches per hour); they need to run twice as long to deliver the same amount of water.

**City Code:** Bodies have check valves, but not pressure-regulating stems; minimum height of 4”.

### **ROTARY**



- Nozzles can be installed on spray head bodies.
- Apply water at a rate slow enough that soils can absorb it without runoff.
- Ideal for areas 12 to 30 feet wide or greater. Deliver water at about one-third the rate of spray heads (about 0.5” per hr.)

**City Code:** Bodies have check valves and 40 PSI pressure-regulating stems; minimum height of 4”, higher by curbs.

## 3. SYSTEM INSPECTION AND MAINTENANCE

### 1. Test

Use your clock's test function or create a test program running each zone for two minutes.

### 2. Map

Map out the zones and irrigation heads using an online aerial image or just a rough sketch of your yard.

### 3. Take Notes

Walk each zone and record the types of heads, plant types and any visible issues that need to be addressed.

### 4. Measure

Measure the distance between each head and either the next closest head or edge of the landscape to determine which heads and nozzles you should use.

### 5. Prioritize

Note issues for each zone, creating a task list so you can tackle little bits at a time. Prioritize the tasks by starting with the issues that waste the most water and work your way down.

# 1

## COMMON ISSUES AND FIXES ✓ CHECKLIST

### Broken Components



**System components that may break or fail include broken heads, lateral lines and nozzles.**

#### LOOK FOR:

Geysers, water pooling or flowing quickly, low pressure or heads that only trickle.

#### FIXES:

Replace broken heads or nozzles. Repair broken pipes by cutting out the broken section of pipe and using a slip fix coupler (PVC) or slip fittings and a new section of pipe (Poly).

**TIP:** When digging to repair heads or pipes, dig holes large enough to provide ample room to work.

### Mixed Zones



**Different types of sprinkler heads within the same zone deliver water at different rates throughout the landscape.**

#### LOOK FOR:

Different head types within the same zone. Often, sprays and rotaries/rotators are mixed, since both fit on the same type of head body.

#### FIXES:

Select the head type most appropriate for that zone and replace any heads that are not of the same type.

**Sunken Heads**

Soils shift over time, causing heads to sink and not rise above the surrounding grass.

**LOOK FOR:**

Heads that are not visible when risers are retracted, heads that cannot spray above the surrounding grass and grass that appears flattened after the system runs.

**FIXES:**

Dig around the head to where it connects to the pipe and install an extension/riser nipple to raise the head height. Top of heads should be flush with the ground.

**Tilted Heads**

Similar to sunken heads, shifting soils can cause heads to tilt, distorting their spray patterns and hindering their ability to water evenly.

**LOOK FOR:**

Heads that do not rise perpendicular to the ground.

**FIXES:**

Dig down to where the head connects to the pipe and straighten the head so it is perpendicular to the ground, even on a slope.

**Obstructed Heads**

Sprinkler heads sometimes get obstructed.

**LOOK FOR:**

Common obstructions like mailboxes, lampposts, ornamental grasses, shrubs, fences, low-hanging tree branches, furniture or toys.

**FIXES:**

Remove the obstruction when possible. If necessary, move the head away from the obstruction by adding a section of pipe.

**Pressure**

When the water pressure is higher than a head's rating, it causes the water to spray in tiny droplets that form a mist. These droplets are less likely to reach the plant's root zone due to wind and evaporation.

**LOOK FOR:**

Mist. Be sure to take a close look at heads because spray heads can appear to mist when viewed from afar.

**FIXES:**

Replace older heads with models that have built-in pressure regulation and are designed for the type of head being used.

**Uneven Coverage**

**Uneven head spacing can result in brown, dry spots and uneven plant growth.**

**LOOK FOR:**

Heads that don't spray far enough to reach adjacent heads.

**FIXES:**

Map the head locations and measure the distance between them. Then choose nozzles that provide the closest head-to-head coverage, where each head spray reaches the adjacent head spray to ensure all of the lawn is receiving water. Heads may need to be moved by adding a pipe extension to the existing connection.

**Clogged Heads**

**Nozzles often become clogged by small particles of debris that can obstruct the spray pattern.**

**LOOK FOR:**

Heads that are spurting or gurgling water or heads that rise but do not spray any water.

**FIXES:**

Remove nozzles and clean out the debris with a toothpick or knife. Nozzle filters can be cleaned with soap, water or vinegar. If it is severely clogged, replace the nozzle.

**Misdirected Heads**

**The risers that extend from heads when the system turns on can become misdirected over time.**

**LOOK FOR:**

Heads spraying in the wrong direction.

**FIXES:**

While the system is running, hold the riser and ratchet it into the proper place. This can typically be done by hand, if tools are needed for better grip, do not squeeze too hard as it can crack the riser. A clicking sound will be heard while the riser is being adjusted.

**Valve Issues**

**Valve parts or their wiring can wear out or corrode, causing the valve to not turn on or off.**

**LOOK FOR:**

A zone that will not turn on usually indicates an electrical issue such as a worn solenoid or corroded or severed wiring. Also look for zones that won't turn off, indicating a mechanical issue that may include debris in a valve or a worn out diaphragm or other part.

**FIXES:**

Repair any wire connections, replace the solenoid or re-run the wire from the clock. Unscrew the top of the valve and inspect diaphragm and clean out if needed.

# Outdoor Water Assessment Form



### Start Times

Program	1	2	3	4
A				
B				
C				
D				

### Watering Days

Program	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
A							
B							
C							
D							

### Runtimes (Minutes/Cycle)

Station/Zone	1	2	3	4	5	6	7	8	9	10	11	12
A												
B												
C												
D												



**Controller Brand and Model:**

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Zone	Head Type	Plant Type	Observations/Issues
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

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