Example 3

Estimating the annual water use of a sprinkler system operating in a holding area in Gainesville, Florida

Assumptions:
Holding area is 400 sq. ft.
Water is applied at a rate of 0.025 gal per sq. ft. per cycle
System uses valved nozzles, so water is not wasted between cycles
Cycles are set to operate 1 minute in: 15 minutes at temperature 68 – 77 °F, 10 minute cycles at temperatures 78 – 88 °F, and 5 minute cycles at temperatures above 88 °F
Typical meteorological year has 3,240 hours from 68 – 78 °F, 1394 hours from 79 – 88 °F, and 368 hours > 88 °F
Water per cycle [gal] = sq. ft. * application per sq. ft. = 400 sq. ft. * 0.025 gal per sq. ft. per cycle = 10 gal per cycle
Number of cycles is found by dividing the number of hours by the cycle duration

Range	Number of hours/yr	Number of cycles/yr	Gallons of water/yr
68 – 78 °F	3,240	12,960	129,600
79 – 88 °F	1,394	8,364	83,640
> 88 °F	368	4,416	44,160
		Annual water use in holding area:	257,400

Note: Water can be saved in the holding area by staging sprinklers so they do not operate in the empty portion or only installing sprinklers in the 75% closest to the parlor, which is occupied a higher percentage of the time. Significant water could also be saved by staging the sprinklers to turn on at THI setpoints instead of temperature setpoints.