



*Almost everyone now has computerized control systems to maximize irrigation efficiency.  
Photo by Joel Jackson*

# Wise Watering:

## MANAGING OUR MOST CRITICAL RESOURCE

*By Joel Jackson, Editor*

Once upon a time I remember the basic functions of golf course maintenance being described as a three-legged stool consisting of irrigation management, pest management and cultural programs. In today's world we would likely add business management to include personnel management, communications and financial accounting. Regardless of how you divide it up, managing the available water resources rises to the top of the list; for without an adequate water supply, the rest are all secondary.

The technology for delivering water effectively through our irrigation systems has improved and continues to improve from the pumping stations down to the very smallest nozzle on the golf course.

Just as the hardware and software has improved, we must embrace these new tools and methods to maximize the irrigation system you manage to its peak efficiency. This might mean changing the way you used to do things. At the very least, physical changes and improvements to your irrigation system and your methods of calculating run times need to be considered.

This means that human beings end up running the show regardless of all the bells and whistles of technology. When it comes to the "capital improvements" line item in the maintenance budget, the economy has put a damper on most of the spending. Somewhere down the line, a program of irrigation-system improve-

ments will need to enter the picture because the pressure on reducing water use for outdoor irrigation is mounting, and, while golf is a minority user of water overall, it is also a recreational activity and the majority of people don't consider it a priority at all.

Overall we have a good story to tell about superintendents managing water. Unlike the typical residential "set and forget" mentality, superintendents monitor their irrigation use daily to produce acceptable playing conditions and healthy turf. Our challenge is to get even better at protecting our water resources. It will take serious efforts by each superintendent and golf course to find ways to improve efficiency and protect water resources.

What follows will be a series of tips and ideas to help each of us become even better water managers. Some will require an investment in capital dollars and others will involve changing methods of monitoring and managing run times and soil moisture.

## Irrigation BMPs from the Golf BMP Manual

Use the lowest-quality water available for irrigation. Potential sources include reclaimed water and brackish water. Surface water sources: storm runoff retention, lakes, rivers, canals. All less quality than groundwater.

**Proper system design:** Golf course architects need to consider limiting water use for new courses or major renovations. The same is true when doing irrigation system upgrades.

**Pump systems:** Proper pressure regulation. Spacing of heads and nozzle selection to optimize distribution.

- Separate control capability for separate areas/conditions on the course. Slopes, roughs, putting surfaces

(inners/outers), tee tops, etc.

- Individual head control around greens and when possible elsewhere.
- Separate zones for roughs where/when appropriate and practical.
- Scheduling using real-time conditions, such as weather measurements or soil moisture measurements.
- Maintenance program to correct broken/clogged heads and leaks on a routine basis.

## Irrigation Efficiency

**1. Hardware** - spacing, nozzles, operating pressure

**2. Software** - Scheduling, programming.

**3. Mapping soil moisture** (in-ground sensors or handheld meters and making specific head/site adjustments. Use hand watering of hot spots.

For older systems with fewer bells and whistles - try to improve on amounts by not routinely setting on 5-, 10-, 15-, 20-minute settings. Back off a click or two and monitor results. Less run time, less water used or wasted and fewer dollars in energy costs.

## The Survey Says

For some real-world feedback on irrigation systems I sent an 8 question survey to the FGCSA Board of Directors. Twelve members responded and here are the results:

**Source of irrigation water:** 6 used reclaimed water with a supplemental recharge well or a surface source backup. 5 used surface water, 3 had a back up source of reclaimed or a well. 1 course on a coastal barrier island uses potable water.

**Pump station:** 8 have VFD pumps to regulate pressure. 2 have Cla-valves and 1 has direct hookup to reclaimed pipeline.

**Control systems:** Not surprisingly all respondents have a computerized control system evenly divided between Rainbird and Toro. 1 reported a hydraulic vs electric system.

**Soil moisture monitoring:** 12 reported monitoring primarily using soil core/pocket knife observations and 1 also used a soil moisture meter.

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**Irrigation zones:** Everyone has separate zones for greens, tees, fairways and roughs to better allocate water use, especially during restriction cutbacks. Additional zones might include: chronic hot spots, driving range, range tee and range target greens, clubhouse, common areas, inner and outer greens heads, greens approaches, newly sodded areas and front and back 9 separations.

**Emergency Shut Off:** All have high/low pressure shut off safeguards. 6 also have rain switch, and 3 can call in by phone and turn off the system.

**Water Conservation methods:** Everyone said they followed the majority of the following conservation methods, with only a couple stating that creating natural areas has not been a priority.

### Water-saving methods

- Regular inspection for leaks and proper head/valve operation
- Install part circle heads where possible
- Install inner/outer heads around greens
- Reduce turf acreage and naturalize more areas on the course

- Use wetting agents and soil amendments to improve dry spots
- Constantly tweak run times by adjusting ET percentage depending on weather and observed conditions

**THIS MEANS THAT HUMAN BEINGS END UP RUNNING THE SHOW REGARDLESS OF ALL THE BELLS AND WHISTLES OF TECHNOLOGY.**

### Other methods and general comments:

- Installed smaller more efficient heads around tees and bunkers
- Installed smaller part circle heads in fairways and roughs for efficiency
- Incorporating more organic material in tee topdressing materials
- Installed mister heads on bunker faces with manual valve control

- By not overseeding this year we saved 12 million gallons of water
- Installed inner/outer heads around greens and saved 500,000 gallons of water
- During our Consumptive Use Permit renewal we showed a detailed report of resources spent trying to reduce consumption. This effort was well received by the Water Management District. Speaking of Water Management Districts, they are under the gun from both the governor and the public to operate more efficiently and uniformly. It is no easy task balancing the need for water by consumers and the utilities that deliver the water, and at the same time conserving existing water resources, developing potential new sources for future needs and protecting water quality.

The golf industry needs to make sure we expand and maintain good working relationships with the districts so they are confident that golf courses remain wise water users.



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